

Recycling Program Report

A.R.S. §49-832.C

Acknowledgments

The 1990 Arizona Solid Waste Recycling Act, through A.R.S. §49-837. D. , established a committee to advise ADEQ's director on the use of the recycling fund. The Arizona Recycling Advisory Committee consists of two representatives from private solid waste haulers, two representatives from private solid waste recycling businesses, four representatives from political subdivisions that have implemented recycling and sources reduction programs, at least one of whom resides in a county having a population of fewer than 500,000 people and one representative of the general public. The nine members of this committee are appointed by the director and four positions are currently vacant.

We would like to acknowledge the support, commitment and hard work of the following Arizona Recycling Advisory Committee members who provide invaluable support to the director and the Recycling Program staff.

Fiscal Year 2002 Arizona Recycling Advisory Committee

Mr. Brian Conway
River Cities Waste Service
Lake Havasu City, Arizona

Ms. Laura Hagen Fairbanks
Pima County
Tucson, Arizona

Ms. Mary Dahl
Chairperson
Santa Cruz County
Nogales, Arizona

Mr. Jerry Haws
USA CRINC/Waste Management
Phoenix, Arizona

Honorable Kay Dyson
Mayor
Town of Springerville
Springerville, Arizona

Recycling Program Staff

The 1990 Arizona Solid Waste Recycling Act established the Recycling Program as part of ADEQ. The Recycling Program is funded through disposal fees collected at solid waste landfills. As outlined in A.R.S. §49-837, the program's responsibilities include distribution and administration of project funding. The Recycling Program offers two funding programs, the Waste Reduction Assistance (WRA) Program and the Waste Reduction Initiative Through Education (WRITE) Program. In addition,

the program conducts public education, technical assistance and outreach events. The Recycling Program also partners with the Arizona Department of Commerce to attract recycling-related companies to the state, keeping the economic benefits of recycling in Arizona.

The Recycling Program team members consist of six ADEQ employees and a representative from the Arizona Department of Commerce.

ADEQ

Tammy Shreeve is the manager of the Recycling and Database Management Unit and is responsible for the administrative functions of the recycling, solid waste data management and waste tire programs. Tammy can be contacted at tas@ev.state.az.us or (602) 771-4171.

David Janke is the recycling statistical and research analyst. He oversees collection and compilation of statistical data pertaining to solid waste recycling and disposal. David conducts research to determine recycling trends and the status of past recycling funded projects. He is able to supply reports containing information pertaining to curbside recycling, drop-off recycling, private recycling companies, non-profit recycling organizations and public recycling coordinators. He can be contacted at drj@ev.state.az.us or (602) 771-4173.

Tori Shaw is the recycling education project coordinator. Tori oversees the Waste Reduction Initiative Through Education Program and additional promotional projects. Organizations may arrange recycling and solid waste reduction presentations for schools and other groups through Tori. You may contact Tori at ts4@ev.state.az.us or (602) 771-4865.

Cathy Charney is the recycling special projects coordinator. She oversees the collection of data pertaining to recycling and related solid waste programs. This includes one-on-one meetings with public, private and non-profit organizations to obtain profiles of their recycling and waste reduction activities, and to introduce the assistance that ADEQ can provide to them. She may be contacted at cjb@ev.state.az.us or (602) 771-4170.

Gloria Harmon is the Waste Reduction Assistance Program coordinator. She oversees both capital equipment funding projects and research and development funding projects. You may contact her at gmh@ev.state.az.us or (602) 771-4174.

The Recycling Program staff can also be reached toll free in Arizona at (800) 234-5677 followed by the staff member's seven digit phone number as the extension. The Recycling Program's Web page can be accessed at www.adeq.state.az.us/environ/waste/solid/recycle.html.

Arizona Department of Commerce

Mitra Khazai is the recycling market development program manager at the Arizona Department of Commerce. Mitra's responsibilities include encouraging new recycling businesses to locate in Arizona and helping existing recycling businesses to expand their operations. She can be contacted at mitrak@azcommerce.com or (602) 280-1398.

Introduction

ADEQ established the Recycling Program to implement A.R.S. §49-831, which became effective in September 1990. The statute created a multi-faceted solid waste reduction program that requires specific types of information and recommendations to be included in the Recycling Program's annual report. Some of the topics discussed in the report include waste stream components analysis, recycling volumes and programs, costs and revenues, funding programs, public education, recycling market development, used motor oil, recycling opportunities, impediments and disincentives, and newsprint. This report covers fiscal year 2002, from July 1, 2001 to June 30, 2002.

The information in this report concerning the public sector's recycling efforts was gathered through the annual recycling and waste reduction questionnaire that was distributed to all jurisdictions within the state. A private sector survey, conducted in cooperation with the Arizona Department of Commerce's Recycling Market Development Program, was distributed to all known private recycling companies, non-profit organizations and landfills. **At the of publication, data from the private and public sectors had not been fully received and compiled.** Updates will be posted at www.adeq.state.az.us/environ/waste/solid/recycle.html.

The following is a summary of the FY 2002 highlights:

- Since the Recycling Program's inception in 1990, it has provided more than \$9.1 million in project funding. Public jurisdictions received funding for 93 projects, the private sector (businesses and organizations) received funding for 66 projects, 63 nonprofit organization projects were funded and universities and colleges received funding for 12 projects; a total of 234 projects received funding from the program.
- The Recycling Program co-sponsored many educational workshops and outreach events, including the Southwest Public Recycling Association's *Recycling Coordinators' Training Workshops*, Students Recycling Used Technology (StRUT) Earth Day computer recycling collection event and Pima County Cooperative Extension's *Our Recycling Garden* workshops.
- Information about the Recycling Program's efforts to verify that the consumers of newsprint in Arizona were in compliance with the newsprint statute (A.R.S. §49-834) for FY 2002 is included in this year's report. It includes the survey methodologies and results from this year's survey.

- In an effort to save our valuable resources, the Recycling Program has reduced the list of funded projects to only list projects awarded during FY 2002. To request information about previously-funded projects, please contact the Recycling Program at (602) 771-4133 or, toll free in Arizona, (800) 234-5677, then enter 771-4133. The Recycling Program has developed an online list of previously-funded projects. The list includes project title, summary, funding amount and funding program. The list is available at www.adeq.state.az.us/envIRON/waste/solid/projects/index.php.
- The Recycling Program joined the nationwide promotional “Recycle Guys” campaign to promote reduce, reuse and recycle. The “Recycle Guys” are various characters that represent the different types of recyclables.



Waste Stream Components Analysis

Arizona’s solid waste recycling act (A.R.S. §49-832. C.3.) requires this annual report to include an analysis of the various components of the waste stream and to propose changes that will conserve energy and reduce solid waste generation. Studies have been completed that analyze specific Arizona municipal and regional waste streams. Contact the Recycling Program for a list of available waste streams studies. Each study provides a clear indication of the waste stream components within its specific governmental jurisdiction, and indicates that each jurisdiction has a unique waste stream. The differences between waste streams and the span of years in which the studies took place make it difficult to extrapolate these studies to a state-wide level. In addition, the studies do not provide information needed to evaluate the waste streams collected by private sector haulers. However, in 1999, the Recycling Program awarded Waste Reduction Assistance Research and Development funding to the Southwest Public Recycling Association (SPRA) to compile waste stream analysis data for representative rural communities across the state. SPRA subcontracted the work to the Garbage Project at the University of Arizona. The university has produced a report that is a comprehensive waste stream analysis for the state. For a copy of the final report, contact the Recycling Program at (602) 771-4133.

The Recycling Program has data available concerning the total amount of solid waste disposed in landfills (for a list of active landfills and the tonnage accepted, see Appendix 1). The information is derived through landfill disposal fees. These data, along with information provided by local governmental jurisdictions within Arizona

and national studies of waste composition, are the basis for the development of general waste management strategies.

Characteristics of the National Waste Stream

The United States Environmental Protection Agency (EPA) provides results of studies analyzing the characteristics of the municipal solid waste stream for the United States in the 2000 calendar year. This study, entitled *Municipal Waste Generations, Recycling and Disposal in the United States: Facts and Figures for 2000*, can be downloaded from www.epa.gov/non-hw/muncpl/report-00/report-00.pdf. A breakdown of the national municipal solid waste stream is illustrated in Figure 1. A total of 231.9 million tons of municipal solid waste were generated in 2000. This is an increase of 0.9 million tons from 1999. This is the fourth straight year of an increase after two consecutive years of decreases. The amount of waste generated per person per day decreased to 4.5 pounds from 4.62 pounds in 1999.

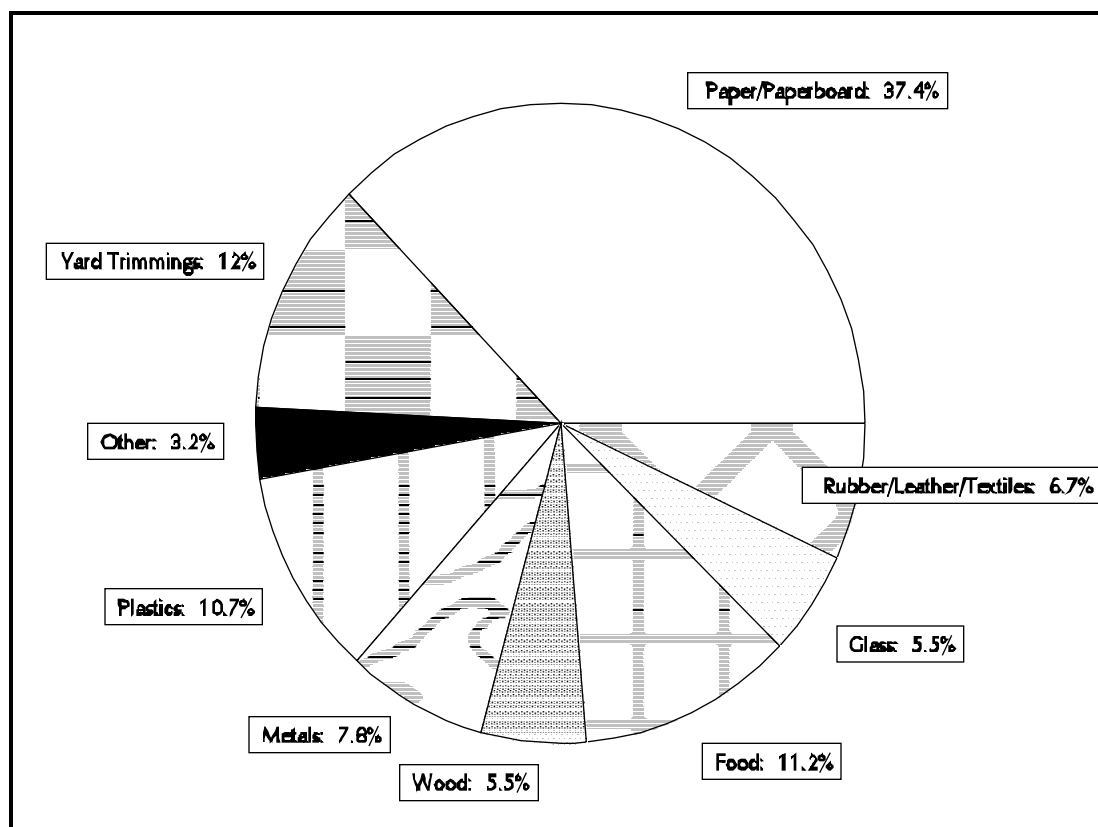


Figure 1. The components of the municipal solid waste stream for the United States for the 2000 calendar year. The total weight of the national municipal solid waste generated during that year was 231,900,000 tons.

Defining the Total Solid Waste Stream

For the purpose of defining recycling rates and diversion rates for Arizona and local jurisdictions, the total solid waste stream is composed of the municipal and non-municipal solid waste streams.

EPA defines municipal solid waste (MSW) as wastes such as durable goods, non-durable goods, containers and packaging, food scraps, yard trimmings and miscellaneous inorganic wastes from residential, commercial, institutional and industrial solid waste sources (Ibid.). Public concern relating to solid waste management tends to focus on this portion of the solid waste stream as it is the only portion that can be influenced directly from the home, business or office. Recycling rates are based solely on materials recycled from MSW. The full waste stream produced by the United States includes heavy industrial and commercial wastes. These are considered non-municipal solid waste and constitute a significant portion of the waste stream. Examples of non-municipal solid waste may include construction and demolition debris, automobile bodies, municipal sludge, combustion ash and industrial process wastes. This report will attempt to separate information concerning MSW from the remainder of the waste stream where possible. This will allow the determination of a recycling rate based solely on the amount of MSW recycled. It will also allow the determination of a diversion rate based on the entire waste stream and the total amount of all waste recycled. Both the recycling rate and the diversion rate will be updated on the Recycling Program's Web page as data continue to be collected. The address to view these updates is www.adeq.state.az.us/envIRON/waste/solid/recycling.html.

Solid Waste Reduction and Energy Conservation

The efforts that the Recycling Program recommends to reduce solid waste generation and energy conservation are the same as last year: buying recycled content products and encouraging backyard composting.

Buying recycled content products, such as paper, creates a demand for materials collected in recycling programs. This not only reduces the amount of waste landfilled, but also significantly reduces the energy needed to produce the new products.

According to Figure 1, paper products compose approximately 37.4 percent of the waste stream. Recycled-content paper is readily available and performs as well as virgin paper products in computer printers, copying machines and printing presses. Buying paper made with recycled content stimulates markets producing these products. This stimulation is transmitted back through the recycling loop, increasing production of recycled content paper which increases the collection of waste papers for recycling. This is a closed loop in Arizona for old newspaper, which is used as a feedstock at Abitibi Consolidated, Inc. in Snowflake, Ariz. to produce newsprint. Likewise, industrial paper waste is used by Wisconsin Tissue in Flagstaff, Ariz. to produce recycled-content tissue products. In addition, there are many environmental

benefits to using recycled material, instead of raw material, when making a new product. Using recycled material conserves energy and natural resources. It also helps prevent pollution.

The Recycling Program promotes buying recycled products (see Page 35 for details on these promotions). The Recycling Program and the Arizona Department of Commerce have sponsored three *Arizona Buy Recycled Expos*. The expos were produced by the Arizona Recycling Coalition and the Southwest Public Recycling Association. In addition, buying recycled content products was a major focus of recycling conferences sponsored by the Recycling Program and the Arizona Department of Commerce including the Arizona Recycling Coalition's First Annual Conference and the Southwest Public Recycling Association's Southwest Recycling Market Development Conference.

Backyard composting is a direct way individual residents can reduce solid waste. Second only to paper, yard trimmings represent 12 percent of the municipal solid waste stream. Therefore, backyard composting programs have the potential to significantly reduce the waste stream. In addition, by reducing waste at its source, the energy used to transport and process and/or dispose of the material is saved. Because of their decentralized nature, backyard composting programs are extremely hard to track. Therefore, any waste reduction and energy savings produced by the programs have not been quantified. There are many backyard composting programs sponsored by individual jurisdictions within the state. In an effort to promote backyard composting, a member of the Recycling Program appeared on local television programs that targeted home gardeners.

Legislative Mandates for Waste Reduction

The intent of the Arizona State Legislature in passing the Recycling Act in 1990 was to give Arizona residents the opportunity to recycle. During the fall of 1997, discussions were held with recycling and waste disposal stakeholders pertaining to setting a non-mandated state recycling goal. However, feedback from these discussions indicated that a recycling goal was not a priority.

Feedback from small community stakeholders suggests that mandating recycling in Arizona at this time could be counterproductive. It would require cities and towns with scant financial resources to initiate recycling programs having capital costs and transportation costs that, alone, make recycling economically burdensome. The voluntary approach has resulted in small communities making incremental strides, within their means, to create or expand sustainable recycling programs. The Recycling Program has been instrumental in assisting such small community programs.

Since Arizona has low landfill disposal fees, as compared to other states, and still has potential land for future landfills, recycling costs in many areas of the state are greater than the cost to dispose of materials. State demographics indicate that many

jurisdictions with sparse populations, or those located great distances from recycling markets, have difficulty initiating and maintaining successful recycling programs. To assist small communities, the Recycling Program targets their residents and encourages them to recycle. Educational materials, technical assistance, funding opportunities and seminars are provided to help find alternatives that will reduce the amount of solid waste that enters their landfills for disposal. During FY 2002 the Recycling Program restructured the WRA funding program to stress the establishment of drop-off recycling programs in communities that had no public recycling opportunities offered. In addition, the maximum amount of funding a public jurisdiction was allowed to request was increased from \$100,000 to \$200,000.

Recycling Volumes and Programs

The Arizona Solid Waste Recycling Statute (A.R.S. §49-832.C.2.) requires that the volume of material recycled during the preceding year be reported annually. This section reports preliminary figures for FY 2002. Information in this section includes:

- The jurisdictions that responded to the distributed questionnaire by Oct. 15, 2002
- The materials recycled and/or diverted by each individual jurisdiction that responded to the distributed questionnaire
- The growth of curbside recycling

The information presented concerning public sector recycling was gathered through the annual waste reduction and recycling questionnaire. The Arizona Recycling Program's questionnaire is distributed to all local government jurisdictions within the state. The program also distributes a Treecycle survey in January to these same jurisdictions to track the number of Christmas trees recycled. A private sector survey, conducted in cooperation with the Arizona Department of Commerce, is distributed to all known private recycling companies, scrap metal dealers, private composters, unincorporated communities, non-profit organizations, large retailers that may have their own recycling operations, manufacturers of recycled content products and active landfills.

At the time of publication of this report, data from all sectors of the recycling community had not been fully compiled as responses were still being received. Therefore, the information presented here is not complete. As more information is compiled, the recycling rate, diversion rate and generation rate for Arizona will be determined and updated at www.adeq.state.az.us/enviro/waste/solid/rate.html.

Response Statistics

The Arizona Recycling Program distributed its FY 2002 solid waste reduction and recycling questionnaire to 102 governmental jurisdictions in Arizona. At the time of publication, 68 of the local governments completed and returned the questionnaire,

which is a 66.7 percent response rate. The number of citizens represented by the responding jurisdictions accounts for 97.3 percent of the state's population. The Recycling Program would like to thank those jurisdictions that took the time and effort to respond to the questionnaire.

Despite the relatively low response rate, volume information for FY 2002 was acquired for 73 of the jurisdictions. For the second consecutive year, this is the largest number of jurisdictions for which data describing the volume of material recycled or diverted has been secured. A special thanks must be given to several organizations that compiled material data for themselves and other communities. The city of Flagstaff and Norton Environmental reported data for themselves and for the cities of Williams and Winslow and Coconino County. Pima County provided data for the unincorporated areas of the county, Marana, Oro Valley and Sahuarita. Sedona Recycles reported for the cities of Sedona and Cottonwood, the towns of Clarkdale and Camp Verde, and the unincorporated areas of the Verde Valley. The Sierra Huachuca Association of Retarded Citizens collected data for the cities of Sierra Vista, Bisbee, Benson, Tombstone and Willcox along with the town of Huachuca City and Cochise County. The cities of Goodyear and Avondale submitted numbers for an HHW collection event in which the towns of Tolleson and Buckeye, the city of Litchfield Park and parts of Maricopa County also participated. Finally, Pinal County reported recycling data for the cities of Apache Junction and Coolidge, the towns of Florence, Kearny and Mammoth, and the unincorporated portions of the county. These organizations are able to report for such a large number of geographic locations because they have taken it upon themselves to operate recycling programs that allow other communities to participate.

Materials Diverted by Jurisdiction

The materials diverted by each jurisdiction during FY 2002 are listed by volume in Table 1. This table also divides the major material categories into separate commodities that are of interest to the recycling industry. For example, paper is divided into newspaper (ONP), cardboard (OCC), office paper, chipboard and other paper products. Many of the separate commodities represent those collected and traded as commodities by the recycling community. Others, such as office paper, are an aggregate of commodities too numerous to list. Combinations, such as PET/HDPE, represent materials collected together that could not be separated for reporting purposes. Complete descriptions of each commodity are given beneath the table. The equivalent data by weight are given in Table 2.

The three jurisdictions that saved the most landfill space by diverting the largest volumes of material during FY 2002 were the city of Phoenix, Maricopa County and the city of Mesa.

- The city of Phoenix offers a comprehensive set of recycling and waste reduction programs for its residents. Programs include a commingled

curbside recycling program for single family homes, and three drop-off locations for recyclables. The materials are processed at one of two material recovery facilities (MRFs), the 27th Avenue recycling facility or Hudson Baler. The city also offers a series of household hazardous waste (HHW) and battery, oil, paint and antifreeze (BOPA) collection events. Clean loads of green waste are diverted at the city's landfill. The material is chipped and a portion is used for city landscaping projects. The enormous amount of green waste processed in this manner resulted in the city diverting more total material than any other jurisdiction during FY 2002 almost, 504,000 cubic yards.

- Maricopa County removed far fewer waste tires for recycling during FY 2002 than were recycled during FY 2001. This reduction dropped Maricopa County to second position with just over 148,000 cubic yards of material diverted from area landfills. The county's waste tire diversion program collects waste tires from the entire county and delivers them to various recyclers. Passenger tires were taken to Landstar in Queen Creek, Ariz. Landstar processes the tires it accepts into crumb rubber. The crumb rubber is used to manufacture rubberized asphalt and molded rubber products, such as soaker hoses. Semi-truck tires were delivered to BAS Recycling in San Bernardino, Calif. and Envirotech Industries in Maricopa, Ariz. BAS processes tires cryogenically, producing crumb rubber for rubberized asphalt, new tires and athletic fields and playground surfaces formed of tiles and mats. The company also sells crumb rubber to other manufacturers. Envirotech peels and shreds 85 percent of the tires it receives to produce crumb rubber. The other 15 percent becomes tire derived fuel. Maricopa County also provides periodic HHW collection events for residents within its unincorporated areas.
- The city of Mesa diverted close to 125,000 cubic yards of material from the landfill it uses during FY 2002, lifting its rank to number three. Like Phoenix, Mesa offers a comprehensive set of waste diversion and recycling programs, including commingled curbside recycling to their single family homes, as well as offering multi-family recycling to all mobile home parks and apartment complexes. During FY 2002 the materials collected through these programs were processed at Valley Recycling Works in Chandler, Ariz., and the new River Recycling MRF located at Salt River Landfill on the Salt River Pima-Maricopa Indian Reservation. Residents may also take advantage of a curbside green waste diversion program. Yard waste is collected in green 90 gallon bins on the same day as recyclables. The material is transported to Salt River Landfill where Western Organics, a private composting company, processes the material. Appliances can also be picked-up curbside for recycling. Two drop-off locations exist for traditional recyclables. HHW collection events are held four times each year. Large roll-

off containers are available for neighborhood clean-ups and for golf courses and other businesses for the collection of green waste and other bulky material. Commercial establishments may also contract with Mesa to collect traditional recyclables such as cardboard and office paper.

If you compare public recycling and diversion programs by tonnage rather than volume (cubic yards), a different picture appears. The three largest diverters of solid waste by weight were the city of Phoenix, the city of Mesa and Pima County.

- The city of Phoenix diverted approximately 173,000 tons of material.
- The city of Mesa diverted over 43,000 tons of material. They replaced Maricopa County in the number two spot, as the county relies heavily on diverting waste tires, which occupy large spaces compared to their weight.
- Pima County diverted close to 32,000 tons of material from its landfills. Like Maricopa County, Pima County operates a waste tire collection program. However, like the city of Phoenix, the county also offers a comprehensive array of recycling programs for its residents. The county has drop-off locations for recyclables at its landfills. In addition, private waste haulers are required to offer curbside recycling to their customers. The haulers may bring the materials they collect to the landfill drop-off locations, or they may choose to use one of the MRFs located in Tucson. The first permanent HHW collection facility in Arizona was jointly established by Pima County and the city of Tucson. The facility is open every Friday and Saturday morning for county residents to drop-off their HHW. The HHW facility also conducts outreach events to its residents and to the residents of other southeastern Arizona counties.

The jurisdictions noted above dominate the amount of waste diverted from landfills, in part, due to their large populations. However, a more accurate measure of the success of a jurisdiction's efforts may be the jurisdiction's diversion rate. This is obtained by dividing the amount of material each jurisdiction reported diverted by the amount of waste generated in each jurisdiction. Table 3 lists the material diverted during FY 2002 by each jurisdiction and an estimate of the municipal solid waste generated during that same time period. The amount of waste generated is determined by multiplying the jurisdiction's population by 1.06 tons per person per year, Arizona's generation rate.

The method of obtaining diversion rates is speculative at best. The generation rate will change from year to year. However, the Recycling Program has made the decision to change from a volume based to a weight based calculation to eliminate uncertainties in various conversion factors. Population figures may also be misleading. For instance, a jurisdiction may operate a recycling facility that receives material from

outside its boundaries, thus inflating the jurisdiction's diversion rate. Counties have an advantage, as they may be responsible for diverting material for all residents, while the population figure used to calculate the county's diversion rate accounts only for citizens residing in unincorporated areas. Steps have been taken to correct the systematic errors this has caused in the past. Figures from organizations that serve a number of jurisdictions have been divided, when possible, to reflect the quantity of material coming from each jurisdiction. Finally, in an effort to retain confidentiality, the ADOC Market Development Program, which collects data from private recycling companies, can not assign private recycling facility data to particular jurisdictions. Therefore, cities and towns serviced in whole, or in part, by private recycling haulers and processors will have underestimated diversion rates. Due to these circumstances, accurate diversion rates are not reported in all cases.

The three jurisdictions with the highest diversion rates are the town of Pinetop-Lakeside, the town of Wickenburg and the city of Benson.

- The town of Pinetop-Lakeside was able to divert an amount equal to 100 percent of the solid waste it generated during FY 2002. The town is able to divert this much waste as it operates an in-vessel composting system that processes municipal solid waste mixed with biosolids generated from its sewage treatment facility. Though some waste generated by Pinetop-Lakeside residents was landfilled, the in-vessel composter obtained large amounts of MSW from surrounding areas to obtain enough for the proper mix with the biosolids. If the various communities which have waste processed by the composter could identify their contributions then their diversion rates would increase, while Pinetop-Lakeside's would decrease. However, private waste haulers account for much of the material, making identification of which communities generated the waste difficult. The finished compost is sold in bulk to various customers.
- The town of Wickenburg diverted an amount equal to 95 percent of the waste it would normally generate. During FY 2002, the Lions Club operated two drop-off locations to collect various forms of paper for recycling. The Lions Club also provided paper recycling bins for several mobile home parks and apartment complexes. However, the town's large diversion rate was the result of mulching a considerable amount of green waste. Residents may request curbside pick up of their green waste by the town, or they may arrange to drop the material off at the mulching location near the town's airport. It is likely that an unusual amount of brush was cleared in the town and surrounding area this year due to the high fire danger during the dry months. Wickenburg is in the process of expanding its recycling program by constructing a drop-off location for paper, plastic, aluminum and tin, but to maintain the town's high diversion rate, the green waste program must remain successful.

- The city of Benson diverted 38.4 percent of the waste it generated. Benson is home to one of two recyclable material processing centers operated by the Sierra Huachuca Association of Retarded Citizens (SHARC). SHARC collects a large majority of the material recycled by residents of Cochise County through a widespread system of drop-off containers. They collect aluminum cans and most types of paper. SHARC has four drop-off locations in Benson along with the processing facility. Residents of Benson also have the option of having their green waste diverted from the county's landfill by the San Pedro Natural Resource Conservation District (San Pedro NRCD). During special events, residents may bring yard waste to San Pedro NRCD's chipping site. The organization also offers to bring their equipment to chip material on site. The city of Benson operates a Christmas tree recycling program. Cochise County operates a waste transfer station in Benson that also serves as an additional recycling drop-off location. The county does a superb job tracking cardboard and plastic shopping bags recycled by private businesses, such as supermarkets and large department stores, and tracking tires recycled through the county's waste tire program. Benson benefitted from this tracking by having its portion of the cardboard and tires recycled attributed to the stores and repair shops within its boundaries credited to them. Most jurisdictions do not track private recycling within their boundaries, and therefore, the recyclables are uncounted.

Other jurisdictions with high diversion rates include: Bisbee (28.6 percent), Willcox (27.1 percent), Cochise County (24.3 percent), Gila County (22.4 percent), Nogales (21.0 percent), Marana (18.2 percent) and Oro Valley (17.1 percent). Bisbee, Willcox and Cochise County have access to programs almost identical to those in Benson. Gila County operates a green waste diversion program and the county's waste tire diversion program. Nogales recycled a large amount of asphalt, while residents of Marana and Oro Valley are offered curbside recycling by private waste hauling companies. These private haulers are required by Pima County to offer this service to their customers.

Table 3 shows the amount of solid waste generated and diverted by local government jurisdictions based on FY 2002. The source for population statistics is the Arizona Department of Economic Security, Research Administration, Population Statistics Unit. Tonnages generated are determined by multiplying each jurisdiction's population by 1.06 tons per person each year, the average amount of municipal solid waste generated by each person in Arizona. Diversion rates are determined to three digits to match the accuracy of the state's generation rate.

Table 3: Solid Waste Generated and Diverted by Local Government Jurisdictions

Jurisdiction	County	Population	Waste Generated (tons)	Reported as Diverted (tons)	Diversion Rate
Apache County	Apache	60,240	63,900	58.89	0.0922%
Apache Junction	Pinal	32,800	34,800	549.48	1.58%
Avondale	Maricopa	40,445	42,900	17.52	0.0408%
Benson	Cochise	4,740	5,020	1,928.66	38.4%
Bisbee	Cochise	6,095	6,460	1,848.08	28.6%
Buckeye	Maricopa	10,650	11,290	0.16	0.00142%
Bullhead City	Mohave	34,615	36,700	0	0%
Camp Verde	Yavapai	9,790	10,400	122.45	1.18%
Carefree	Maricopa	3,095	3,280	71.74	2.19%
Casa Grande	Pinal	27,290	28,900	1,633.03	5.65%
Cave Creek	Maricopa	3,900	4,130	119.71	2.90%
Chandler	Maricopa	176,581	186,875	26,368.90	14.1%
Chino Valley	Yavapai	8,205	8,700	0.39	0.0045%
Clarkdale	Yavapai	3,535	3,750	62.55	1.67%
Clifton	Greenlee	2,595	2,750	Did not respond to questionnaire	
Cochise County	Cochise	48,205	51,100	12,434.02	24.3%
Coconino County	Coconino	51,115	54,200	2,042.31	3.77%
Colorado City	Mohave	3,785	4,010	Did not respond to questionnaire	
Coolidge	Pinal	8,085	8,570	957.08	11.2%
Cottonwood	Yavapai	9,770	10,360	289.07	2.79%
Douglas	Cochise	16,585	17,600	2,519.12	14.3%
Duncan	Greenlee	825	875	Did not respond to questionnaire	
Eagar	Apache	4,085	4,330	Did not respond to questionnaire	

Table 3: Solid Waste Generated and Diverted by Local Government Jurisdictions

Jurisdiction	County	Population	Waste Generated (tons)	Reported as Diverted (tons)	Diversion Rate
El Mirage	Maricopa	11,915	12,630	Did not respond to questionnaire	
Eloy	Pinal	10,675	11,320	Did not respond to questionnaire	
Flagstaff	Coconino	57,700	61,200	8,181.08	13.4%
Florence	Pinal	17,225	18,300	557.22	3.04%
Fountain Hills	Maricopa	20,235	21,400	0	0%
Fredonia	Coconino	1,070	1,134	0.88	0.078%
Gila Bend	Maricopa	2,000	2,120	Did not respond to questionnaire	
Gila County	Gila	27,475	29,100	6,504.37	22.4%
Gilbert	Maricopa	122,360	129,700	11,985.05	9.24%
Glendale	Maricopa	224,970	238,000	20,034.14	8.42%
Globe	Gila	7,510	7,960	Did not respond to questionnaire	
Goodyear	Maricopa	22,820	24,200	450.55	1.86%
Graham County	Graham	18,610	19,700	586.80	2.98%
Greenlee County	Greenlee	5,170	5,480	93.08	1.70%
Guadalupe	Maricopa	5,230	5,540	Did not respond to questionnaire	
Hayden	Gila	890	943	Did not respond to questionnaire	
Holbrook	Navajo	4,930	5,230	10.17	0.190%
Huachuca City	Cochise	1,775	1,880	46.75	2.49%
Jerome	Yavapai	325	345	0.03	0.01%
Kearny	Pinal	2,250	1,900	62.65	3.30%
Kingman	Mohave	21,240	22,500	5.83	0.0259%
Lake Havasu City	Mohave	44,200	46,900	7,713.04	16.4%

Table 3: Solid Waste Generated and Diverted by Local Government Jurisdictions

Jurisdiction	County	Population	Waste Generated (tons)	Reported as Diverted (tons)	Diversion Rate
La Paz County	La Paz	13,415	14,200	346.00	2.44%
Litchfield Park	Maricopa	3,845	4,080	5.14	0.126%
Mammoth	Pinal	1,780	1,890	20.47	1.08%
Marana	Pima	15,765	16,700	3,039.11	18.2%
Maricopa County	Maricopa	216,515	230,000	16,595.57	7.22%
Mesa	Maricopa	414,075	439,000	43,490.69	9.91%
Miami	Gila	1,945	2,060	4.17	0.202%
Mohave County	Mohave	57,740	61,200	2,100.25	3.43%
Navajo County	Navajo	65,570	69,500	813.55	1.17%
Nogales	Santa Cruz	20,990	22,200	4,651.55	21.0%
Oro Valley	Pima	32,520	34,500	5,909.67	17.1%
Page	Coconino	6,975	7,390	40.00	0.554%
Paradise Valley	Maricopa	13,664	14,500	Did not respond to questionnaire	
Parker	La Paz	3,145	3,330	0.79	0.024%
Patagonia	Santa Cruz	895	949	Did not respond to questionnaire	
Payson	Gila	14,155	15,000	367.74	2.45%
Peoria	Maricopa	108,364	114,900	576.44	0.0403%
Phoenix	Maricopa	1,344,775	1,430,000	172,572.12	12.1%
Pima	Graham	2,030	2,150	Did not respond to questionnaire	
Pima County	Pima	313,915	333,000	31,686.35	9.52%
Pinal County	Pinal	83,575	88,600	4,107.84	4.64%
Pinetop-Lakeside	Navajo	3,680	3,900	3,903.55	100%
Prescott	Yavapai	35,815	38,000	1,899.05	5.00%
Prescott Valley	Yavapai	24,545	26,000	0	0%

Table 3: Solid Waste Generated and Diverted by Local Government Jurisdictions

Jurisdiction	County	Population	Waste Generated (tons)	Reported as Diverted (tons)	Diversion Rate
Quartzsite	La Paz	3,375	3,580	Did not respond to questionnaire	
Queen Creek	Maricopa	4,940	5,240	0	0%
Safford	Graham	9,365	9,930	0	0%
Sahuarita	Pima	4,615	4,890	542.31	11.1%
Santa Cruz County	Santa Cruz	17,440	18,500	1,419.10	7.67%
San Luis	Yuma	17,090	18,100	42.08	0.232%
Scottsdale	Maricopa	209,960	223,000	27,951.78	12.5%
Sedona	Yavapai	10,430	11,060	746.82	6.75%
Show Low	Navajo	8,085	8,570	0	0%
Sierra Vista	Cochise	38,740	41,100	6,573.19	16.0%
Snowflake	Navajo	4,580	4,850	Did not respond to questionnaire	
Somerton	Yuma	7,520	7,670	Did not respond to questionnaire	
South Tucson	Pima	5,490	5,600	2.05	0.0366%
Springerville	Apache	2,020	2,140	Did not respond to questionnaire	
St. Johns	Apache	3,535	3,750	Did not respond to questionnaire	
Superior	Pinal	3,265	3,460	Did not respond to questionnaire	
Surprise	Maricopa	30,848	38,400	17.50	0.0456%
Taylor	Navajo	3,385	3,590	Did not respond to questionnaire	
Tempe	Maricopa	159,435	169,000	10,110.10	5.98%
Thatcher	Graham	4,060	4,300	161.52	3.76%
Tolleson	Maricopa	5,040	5,340	0.03	0.0006%

Table 3: Solid Waste Generated and Diverted by Local Government Jurisdictions

Jurisdiction	County	Population	Waste Generated (tons)	Reported as Diverted (tons)	Diversion Rate
Tombstone	Cochise	1,520	1,610	68.89	4.28%
Tucson	Pima	498,305	528,000	20,563.15	3.89%
Wellton	Yuma	1,860	1,970	0	0%
Wickenburg	Maricopa	5,265	5,580	5,302.67	95.0%
Willcox	Cochise	3,775	4,000	1,084.43	27.1%
Williams	Coconino	2,885	3,060	455.62	14.9%
Winkelman	Gila	450	477	Did not respond to questionnaire	
Winslow	Navajo	9,550	10,120	22.27	0.220%
Yavapai County	Yavapai	75,915	80,500	2,863.30	3.56%
Youngtown	Maricopa	3,155	3,340	2.50	0.0784%
Yuma	Yuma	79,530	84,300	42.03	0.0499%
Yuma County	Yuma	59,280	60,500	14.20	0.0235%
Totals		5,292,007	5,610,000	477,370	8.51%

Residential Curbside Recycling Programs

The most convenient method for citizens to recycle is through residential curbside recycling. In most cases, a recycling bin is supplied to each household. Often, recycling pick-up occurs once a week and solid waste (garbage) pick-up occurs once a week. This reduces the effort required to recycle and helps promote the recycling habit. Due to the convenience, residential curbside recycling is the major source of recyclable material collected by public jurisdictions. A residential curbside recycling program is defined as any program that collects a variety of materials left in close proximity to their sources on a regularly scheduled basis. The program requires the collection of at least one recyclable material other than green waste or white goods. Material can be collected at the curb or alley for single-family residences.

Multi-family complexes are included if on-site recycling containers are provided. The recyclable materials may be source separated, sorted at the curb, commingled, blue bag programs or the complete residential waste stream sorted at a “dirty MRF.” Scheduled collection must be at least once a month. Curbside recycling programs may be operated by large waste hauling companies, municipal solid waste management departments or small businesses. They occur in both metropolitan and rural areas. The city of Phoenix, population 1,344,775, operates the state’s largest curbside recycling program. Jerome, the smallest incorporated area in Arizona with a population 325, operates one of the smallest programs. The number of residents within the 974,000 homes served by curbside recycling programs throughout the state is estimated to be 2,570,000, or 48.4 percent of the state’s population.

The growth of curbside recycling is illustrated in Figure 2 and documented in Table 4. These both show the number of households participating in curbside recycling programs by year. Though the city of Tucson had residential pick-up of newspapers for recycling in the 1970s, residential curbside recycling in Arizona as we know it today began in 1988. At that time, the city of Tempe initiated its first pilot program servicing 816 homes. Since that time, residential curbside recycling programs have operated continuously, and have steadily grown in size. From 1988 to 1991, small pilot curbside recycling programs were introduced. In 1992, the town of Gilbert became the first jurisdiction to offer curbside recycling to all single-family homes. Since that time, curbside recycling has shown a rapid growth as large metropolitan cities began implementing jurisdiction-wide curbside programs. By the mid-1990s the number of jurisdictions offering this type of recycling leveled off, while the number of households continued to grow. From 1996 through 1998, low commodity prices forced collection programs in marginally profitable routes to close, thus the number of curbside recycling programs began to fall. This caused a reduction in the number of households

Year	Number of Jurisdictions	Number of Households
1988	1	1,000
1989	4	13,000
1990	7	24,000
1991	15	82,000
1992	24	200,000
1993	29	298,000
1994	32	418,000
1995	32	528,000
1996	28	628,000
1997	33	692,000
1998	22	691,000
1999	25	788,000
2000	27	837,000
2001	27	922,000
2002	28	974,000

Table 4: Growth in the number of households having the opportunity to participate and jurisdictions offering curbside recycling. Figures are estimates for Dec. 31 of each year. 2002 figures are based on program status as of July 1,

participating in curbside recycling programs across the state, especially in Pima County. The ultimate effect on the number of participating program was not felt until 1998 when a small decrease occurred. Large decreases in the number of households having the opportunity to participate were not seen as this period coincided with the expansion of the city of Phoenix's curbside recycling program jurisdiction-wide. However, from 1999 to the present, the implementation of jurisdiction-wide curbside recycling programs in Flagstaff, Williams and Glendale and the spread of multi-family housing recycling programs in the major metropolitan areas has caused the number of households to increase again. Some cities are contemplating curbside recycling for their residents. Therefore, the immediate trend for the future is for the number of households participating in curbside recycling to continue to rise.

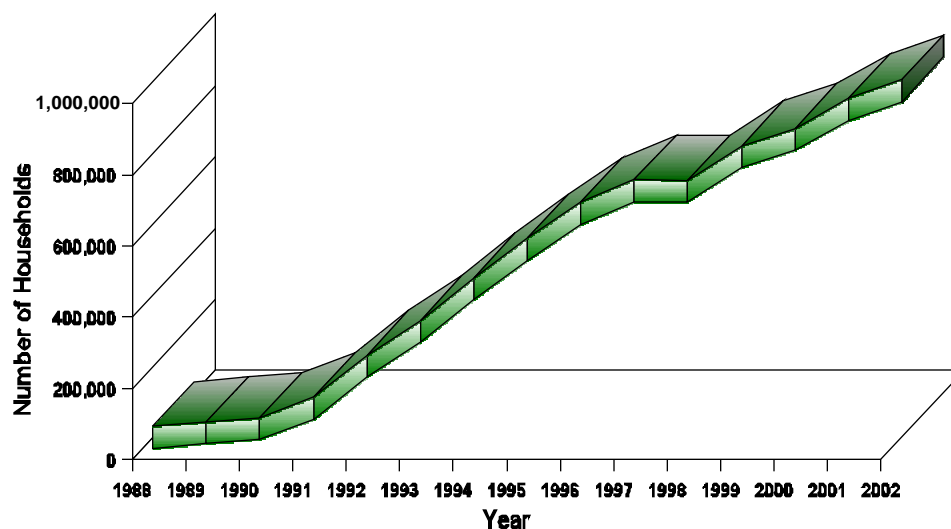


Figure 2: The growth of curbside recycling. The period between 1988 and 1991 reflects the initiation of small pilot curbside recycling programs. Since 1992 the implementation of larger programs has sustained a rapid growth in the number of households being offered curbside recycling.

The weight of materials (in tons) diverted, as reported by each jurisdiction for the 2002 fiscal year

Jurisdiction	Newspaper	Cardboard	Office Paper	Chipboard	Other Paper	Green/wood	Yard Waste	Christmas Trees	Organics	Aluminum	Steel	White Goods	Other Metals	PET	HDPE	PET/HDPE	Other Plastic	Glass	HHW Collections	Miscellaneous	Unspecified	Total Diverted
Apache Junction	53.72	317.25	158.76					4.62		5.44			1.10			5.18			3.42			549.48
Avondale								16.67			0.00		0.11						0.74			17.52
Benson	135.62	1,051.59	20.12		3.17		685.71	0.83		2.75									12.58	16.28		1,928.66
Bisbee	88.88	964.97	32.18		18.93		714.29	0.58		1.67									6.23	20.35		1,848.08
Buckeye											0.00		0.02						0.14			0.16
Camp Verde	86.81	15.48						0.71		1.28	2.13			0.85	2.24			12.95				122.45
Carefree	19.20	8.40	0.50				5.00	10.00		1.08	0.38		0.84	3.00				18.00	5.35			71.74
Casa Grande	668.66	687.83	25.63	30.27				6.31		7.68	138.00			10.41	8.01			50.23				1,633.03
Cave Creek	41.66	11.00			2.30	5.00		12.00		18.51	0.38		0.84	3.00				18.25	6.76			119.71
Chandler	8,339.00	1,726.00			2,029.00	26.00	132.00	131.04		9.00	1,266.00			409.00	457.00		141.00	466.00	46.86	11,191.00		26,368.90
Chino Valley								0.39														0.39
Clarkdale	36.38	6.63									0.31			0.47	1.06			17.71				62.55
Coolidge	284.33	558.46	22.20							1.06	75.00					1.03				15.00		957.08
Cottonwood	169.88	21.04						2.44		3.37	5.90		0.05	2.20	4.81			42.70		36.69		289.07
Douglas	18.11	1,168.00	13.20				180.00												15.88	58.24	1,065.69	2,519.12
Flagstaff	356.27	4,717.41			1,603.23			5.33		44.53	178.14	757.08		44.53	89.06			338.50		47.00		8,181.08
Florence	12.16	357.73	99.71			72.14		0.78		0.64	11.00					0.40			1.06	1.59		557.22
Fredonia								0.88														0.88
Gilbert	5,538.00	1,158.00			116.50		4,163.70	65.70		154.00	204.00			144.00	216.00			206.00	19.15			11,985.05
Glendale	7,254.00	2,975.00			5,330.00	3,010.00				183.00	386.00		1.72	291.00	416.00				18.42	169.00		20,034.14
Goodyear								11.55			0.00		0.50						3.36		435.14	450.55
Holbrook								1.88											2.55	5.75		10.17
Huachuca City	12.85	23.66			5.33					0.84										4.07		46.75
Jerome								0.03														0.03
Kearny	22.00	23.09	11.60					2.08		0.17			0.85			0.26			2.61			62.65
Kingman								5.83														5.83
Lake Havasu City	934.60	639.30						8.33		30.60	688.50	425.00		28.00	65.30			273.50	27.51	5,017.40		7,713.04
Litchfield Park								2.50			0.00		0.34						2.30			5.14
Mammoth	3.98	11.02	5.00					0.33		0.02						0.12						20.47
Marana	1,666.46	754.91	188.85			3.76							120.74			71.60		171.83			60.96	3,039.11
Mesa	16,562.00	3,994.00			3,831.00		14,335.00	116.46		562.00	673.00	425.00	8.78	443.00	1,204.00			1,228.00	90.21	18.24		43,490.69
Miami								4.17														4.17
Nogales							300.00	0.77											0.77	4,650.00		4,951.55
Oro Valley	3,198.27	1,451.99	361.94			11.57							302.52			137.22		329.32			116.84	5,909.67
Page						30.00	10.00															40.00
Parker								0.79														0.79
Payson					367.74																	367.74
Peoria	569.00												0.92						6.52			576.44
Phoenix	48,111.00	10,631.00	84.00		10,572.00		88,500.00	363.78		1,178.00	1,634.00		4,717.20	1,451.00	1,825.00		15.00	2,879.00	226.23	384.91		172,572.12
Pinetop-Lakeside								3.55	1,300.00												2,600.00	3,903.55
Prescott	151.46	586.90			681.56			5.83		18.93	75.73	321.85		18.93	37.86							1,899.05
Sahuarita	305.01	136.52	34.18										10.88			13.10		31.59		11.03		542.31
San Luis							40.00	2.08														42.08
Scottsdale	14,330.00	2,404.00			6,728.00		1,179.00	71.41		291.00	562.00		2.45	344.00	344.00			1,669.00	26.92			27,951.78
Sedona	342.50	224.00			1.16			5.31		9.95	13.15			13.80	9.01			125.50		2.44		746.82
Sierra Vista	475.00	2,700.00	301.82		72.88		1,754.00	6.25		95.00	231.00		214.00						593.00	130.24		6,573.19
South Tucson	1.15	0.52	0.13										0.04			0.05		0.12			0.04	2.05
Surprise								17.50														17.50
Tempe	7,444.00	1,514.00			63.00			23.75		88.00	100.00		5.84	190.00	240.00			404.00	25.51	12.00		10,110.10
Thatcher										6.00	120.00		15.14						20.38			161.52

The weight of materials (in tons) diverted, as reported by each jurisdiction, continued

Jurisdiction	Newspaper	Cardboard	Office Paper	Chipboard	Other Paper	Green/wood	Yard Waste	Christmas Trees	Organics	Aluminum	Steel	White Goods	Other Metals	PET	HDPE	PET/HDPE	Other Plastic	Glass	HHW Collections	Miscellaneous	Unspecified	Total Diverted
Tolleson											0.00		0.00						0.03			0.03
Tombstone	11.68	50.15	0.38		0.64			0.03											1.94	4.07		68.89
Tucson	9,138.03	2,647.67	11.89		248.00	116.52	129.00			198.00	569.17		2,421.58	402.00	510.00	5.91		3,867.11	75.31	205.53	17.43	20,563.15
Wickenburg	301.00						5,000.00	1.67														5,302.67
Willcox	23.30	982.64					60.15			1.24									4.90	12.20		1,084.43
Williams	36.45	141.24			164.02					4.56	18.22	77.45		4.56	9.12							455.62
Winslow	1.78	6.91			8.02					0.22	0.89	3.79		0.22	0.44							22.27
Youngtown												2.50										2.50
Yuma							10.00	26.00			0.31		0.86						4.86	0.00		42.03
Apache County													0.34						7.84	58.94		67.12
Cochise County	543.86	641.85	111.63		64.59		5,726.86	10.25		1.10		5,078.00	12.91						20.50	238.74		12,450.29
Coconino County	49.31	191.09	221.91							6.16	24.66	104.79		6.16	12.32					1,425.91		2,042.31
Gila County							5,047.00	1.46			890.00								13.73	552.18		6,504.37
Graham County													0.57							586.23		586.80
Greenlee County																				93.08		93.08
La Paz County	192.80										0.00					14.60		0.00		138.60		346.00
Maricopa County											0.00		0.02						0.16	16,595.48		16,595.67
Mohave County																			6.85	2,093.40		2,100.25
Navajo County	50.00																			802.09		852.09
Pima County	10,845.37	5,069.59	1,268.00			423.08				12.00	472.51		7,950.54	16.00	20.00	437.22		1,042.83	431.85	3,360.00	337.85	31,686.85
Pinal County	886.52	952.86	553.35		10.39					11.68		234.00	5.37			13.73			10.73	1,429.21		4,107.84
Santa Cruz County	56.34												865.67				90.27		3.84	402.98		1,419.10
Yavapai County	441.46	89.77			35.00	357.14	214.29			11.85	17.11	504.00	28.61	6.52	12.38			142.52	38.79	963.86		2,863.30
Yuma County																			14.20			14.20
Private Companies	3,458.75	45,741.60	1,020.00		7,715.00	60,000.00			96,868.00	5,876.54	37,067.54	2,000.00	11,347.00	33.65	8.62			187.20	68,278.54	8,700.00	123,030.20	471,332.64
Combined Tonnage	143,268.61	97,355.06	4,546.99	30.27	39,671.46	64,055.22	128,186.00	951.87	98,168.00	8,837.86	45,425.02	9,508.46	28,038.36	3,866.30	5,492.23	700.41	246.27	13,521.86	70,078.54	59,442.70	127,675.18	949,066.65
Percentage	15.10%	10.26%	0.48%	0.00%	4.18%	6.75%	13.51%	0.10%	10.34%	0.93%	4.79%	1.00%	2.95%	0.41%	0.58%	0.07%	0.03%	1.42%	7.38%	6.26%	13.45%	100.00%

Material categories are self explanatory except for the following:

Office paper includes white ledger, color ledger, mixed office, computer print-out (CPO), OP/CPO, and high grade paper,

Other paper includes undifferentiated ONP/OCC/OMG, magazines (OMG), phone books, kraft bags, aseptic packaging, polycoated packaging, mixed paper, mixed residential paper, groundwood paper, hard/soft cover books, paper sludge, pulp substitutes, bulk mail, and undifferentiated paper,

Green/wood includes undifferentiated vegetation, pallets, and dimensional lumber,

Organics includes manure, animal bedding, crop residuals, and waste water sludge,

Aluminum includes aluminum cans, aluminum foil, aluminum scrap and undifferentiated aluminum,

Steel includes tin cans, bi-metal cans, aerosol cans, oil filters, scrap steel,steel/iron scrap, ferrous scrap, and undifferentiated steel,

White goods includes appliances and white goods/scrap,

Other metals includes scrap metal, copper, aluminum/steel cans, lead acid batteries, brass, non-ferrous scrap, and undifferentiated metal,

PET (#1 plastic) includes clear PET, green PET, #1 plastic soda bottles, and undifferentiated PET,

HDPE (#2 plastic) includes natural #2 plastic water/milk jugs, colored HDPE, HDPE bags, and undifferentiated HDPE,

Other plastics includes LDPE (#4), polystyrene (#6), ABS, injection mold plastics, and undifferentiated plastics,

Glass includes flint (clear), amber, green, mixed, and undifferentiated glass,

HHW collections include used motor oil, antifreeze, latex paint, oil paint, paint sludge, flammable liquids, freon, drop-'n-swap items, compressed gas, CI-flammables, solvents, mercury, and household batteries,

Miscellaneous includes waste tires, mattresses and box springs, asphalt, wire and cable, textiles, other fiber, toner cartridges, transparencies, construction debris, demolition debris, fluorescent bulbs, carpet, carpet foam, and electronic scrap,

Unspecified includes undifferentiated curbside and undifferentiated drop-off.

The volume of materials diverted as reported by each jurisdiction for the 2002 fiscal year
Volume is given in cubic yards compressed to the equivalent to average landfill pressure

Jurisdiction	Newspaper	Cardboard	Office Paper	Chipboard	Other Paper	Green/wood	Yard Waste	Christmas Trees	Organics	Aluminum	Steel	White Goods	Other Metals	PET	HDPE	PET/HDPE	Other Plastic	Glass	HHW Collections	Miscellaneous	Unspecified	Total Diverted
Apache Junction	134.30	834.87	396.90					13.99		43.52			0.85			29.17			3.83			1,457.43
Avondale								50.51			0.00		0.10						0.77			51.38
Benson	339.05	2,767.34	50.30		7.93		2,077.92	2.53		22.00									15.51	145.93		5,428.50
Bisbee	222.20	2,539.39	80.45		47.33		2,164.50	1.77		13.36									7.68	182.38		5,259.06
Buckeye											0.00		0.02						0.14			0.16
Camp Verde	217.03	40.74						2.15		10.24	7.59			4.79	12.64			9.25				304.43
Carefree	48.00	22.11	1.25				15.15	30.30		8.60	1.34		0.86	16.90				12.86	6.26			163.63
Casa Grande	1,671.65	1,810.08	64.08	75.68				19.12		61.44	492.86			58.65	45.13			35.88				4,334.55
Cave Creek	104.15	28.96			5.75	15.15		36.36		148.08	1.34		0.86	16.90				13.04	8.71			379.31
Chandler	20,847.50	4,542.11			5,072.50	78.79	400.00	397.09		72.00	4,521.43			2,304.23	2,574.65		794.37	332.86	48.21	5,598.70		47,584.41
Chino Valley								1.19														1.19
Clarkdale	90.94	17.45									1.10			2.63	5.97			12.65				130.74
Coolidge	710.83	1,469.62	55.50							8.48	267.86					5.81				136.36		2,654.47
Cottonwood	424.69	55.36						7.40		26.92	21.06		0.06	12.41	27.09			30.50		13.75		619.23
Douglas	45.28	3,073.68	33.00				545.45												17.71	523.17	2,131.38	6,369.67
Flagstaff	890.68	12,414.24			4,008.08			16.14		356.24	636.21	2,911.85		250.87	501.75			241.79		534.09		22,761.92
Florence	30.40	941.40	249.28			218.61		2.37		5.16	39.29					2.25			1.34	14.45		1,504.56
Fredonia								2.65														2.65
Gilbert	13,845.00	3,047.37			291.25		12,617.27	199.09		1,232.00	728.57			811.27	1,216.90			147.14	19.15			34,155.02
Glendale	18,135.00	7,828.95			13,325.00	9,121.21				1,464.00	1,378.57		2.08	1,639.44	2,343.66				19.96	1,536.36		56,794.24
Goodyear								35.00			0.01		0.44						3.50		870.28	909.24
Holbrook								0.63											3.22	52.27		56.12
Huachuca City	32.13	62.26			13.33					6.72										36.45		150.89
Jerome								0.08														0.08
Kearny	55.00	60.75	29.00					6.31		1.34			1.03			1.44			3.29			158.17
Kingman								17.68														17.68
Lake Havasu City	2,336.50	1,682.37						25.25		244.80	2,458.93			157.75	367.89			195.36	34.76	1,959.92		9,463.52
Litchfield Park								7.58			0.01		0.30						2.39			10.28
Mammoth	9.95	29.00	12.50					1.01		0.13						0.65						53.24
Marana	4,166.15	1,986.61	472.12			11.39						603.70				403.38		122.74			121.92	7,888.01
Mesa	41,405.00	10,510.53			9,577.50		43,439.39	352.90		4,496.00	2,403.57	1,634.62	10.65	2,495.77	6,783.10			877.14	97.35	165.82		124,249.35
Miami								12.64														12.64
Nogales							909.09	2.34											0.92	1,816.41		1,819.66
Oro Valley	7,995.68	3,821.03	904.85			35.06						1,512.60				773.07		235.23			233.68	15,511.19
Page						90.91	30.30															121.21
Parker								2.40														2.40
Payson					919.35																	919.35
Peoria	569.00											1.11							7.43			577.54
Phoenix	120,277.50	27,976.32	210.00		26,430.00		268,181.82	1,102.36		9,424.00	5,835.71		18,108.32	8,174.65	10,281.69		84.51	2,056.43	252.02	3,882.94		502,278.27
Pinetop-Lakeside								10.76	3,939.39												5,200.00	9,150.15
Prescott	378.65	1,544.47			1,703.90			17.68		151.44	270.46	1,237.88		106.65	213.30							5,624.43
Sahuarita	762.53	359.26	85.45										54.40			73.80		22.56			22.06	1,380.07
San Luis							121.21	6.31														127.53
Scottsdale	35,825.00	6,326.32			16,820.00		3,572.73	8,569.00		2,328.00	2,007.14		2.19	1,938.03	1,938.03			1,192.14	32.85			80,551.42
Sedona	856.25	589.47			2.90			16.09		79.60	46.96			77.75	50.76			89.64		27.69		1,837.11
Sierra Vista	1,187.50	7,105.26	754.55		182.20		5,315.15	18.94		760.00	825.00		378.45						729.53	1,167.07		18,423.65
South Tucson	2.87	1.37	0.33										0.20			0.28		0.09			0.08	5.22
Surprise								53.03														53.03
Tempe	18,610.00	3,984.21			157.50			71.97		704.00	357.14		5.21	1,070.42	1,352.11			288.57	29.90	109.09		26,740.13
Thatcher										48.00	428.57		51.39						25.75			553.71

The volume of materials diverted as reported by each jurisdiction, continued.

Jurisdiction	Newspaper	Cardboard	Office Paper	Chipboard	Other Paper	Green/wood	Yard Waste	Christmas Trees	Organics	Aluminum	Steel	White Goods	Other Metals	PET	HDPE	PET/HDPE	Other Plastic	Glass	HHW Collections	Miscellaneous	Unspecified	Total Diverted
Tolleson											0.00		0.00						0.03			0.03
Tombstone	29.20	131.97	0.95		1.60			0.10											2.39	36.45		202.67
Tucson	22,845.08	6,967.55	29.73		620.00	353.09	390.91			1,584.00	2,032.75		8,653.84	2,264.79	2,873.24	33.30		2,762.22	95.16	80.29	34.86	51,620.80
Wickenburg	752.50						15,151.52	5.05														15,909.07
Willcox	58.25	2,585.89					80.00			9.92									6.04	109.27		2,849.38
Williams	91.13	371.68			410.05					36.48	65.07	297.88		25.69	51.38							1,349.37
Winslow	4.45	18.18			20.05					1.76	3.18	14.58		1.24	2.48							65.92
Youngtown												9.62										9.62
Yuma							30.30	78.79			1.09		1.04						5.89	0.00		117.11
Apache County													0.42						9.90	616.00		626.32
Cochise County	1,359.65	1,689.08	279.08		161.48		17,354.12	31.06		8.80		19,530.77	11.52						21.88	2,564.87		43,012.29
Coconino County	123.28	502.87	554.78							49.28	88.07	403.04		34.70	69.41					13,244.76		15,070.18
Gila County							15,293.94	4.42			3,178.57								17.35	5,325.87		23,820.15
Graham County													0.69							7,002.55		7,003.24
Greenlee County																				843.89		843.89
La Paz County	482.00										0.00					82.25		0.00		1,108.80		1,673.05
Maricopa County											0.00		0.02						0.17	148,096.32		148,096.51
Mohave County																			5.87	19,711.53		19,717.40
Navajo County	125.00																			7,258.13		7,383.13
Pima County	27,113.43	13,341.03	3,170.00			1,282.06				96.00	1,687.55		36,853.12	90.14	112.68	2,463.21		744.88	511.40	29,623.64	675.70	117,764.83
Pinal County	2,216.30	2,507.52	1,456.19		25.96					93.48		900.00	4.79			77.34			12.48	12,193.18		19,487.24
Santa Cruz County	140.85												4,317.49				508.56		6.55	3,644.75		8,618.20
Yavapai County	1,103.65	236.23			87.50	1,082.25	649.35			94.80	61.12	1,938.46	34.72	36.75	69.72			101.80	49.02	10,790.36		16,335.73
Yuma County																			17.94			17.94
Private Companies	8,646.88	120,372.63	2,550.00		19,287.50	181,818.18			146,127.03	47,012.32	132,384.07	7,692.31	39,252.27	189.58	48.56			133.71	86,222.30	88,636.36	246,060.40	1,126,434.11
Combined Volume	357,318.01	256,197.52	11,440.27	75.68	99,178.64	194,106.71	388,340.14	11,232.02	150,066.42	70,702.90	162,232.21	36,571.00	109,864.75	21,782.00	30,942.13	3,945.98	1,387.44	9,658.47	88,356.55	368,789.89	255,350.36	2,626,629.98
Percentage	13.60%	9.75%	0.44%	0.00%	3.78%	7.39%	14.78%	0.43%	5.71%	2.69%	6.18%	1.39%	4.18%	0.83%	1.18%	0.15%	0.05%	0.37%	3.36%	14.04%	9.72%	100.03%

Material categories are self explanatory except for the following:

Office paper includes white ledger, color ledger, mixed office, computer print-out (CPO), OP/CPO, and high grade paper,

Other paper includes undifferentiated ONP/OCC/OMG, magazines (OMG), phone books, kraft bags, aseptic packaging, polycoated packaging, mixed paper, mixed residential paper, groundwood paper, hard/soft cover books, paper sludge, pulp substitutes, bulk mail, and undifferentiated paper,

Green/wood includes undifferentiated vegetation, pallets, and dimensional lumber,

Organics includes manure, animal bedding, crop residuals, and waste water sludge,

Aluminum includes aluminum cans, aluminum foil, aluminum scrap and undifferentiated aluminum,

Steel includes tin cans, bi-metal cans, aerosol cans, oil filters, scrap steel,steel/iron scrap, ferrous scrap, and undifferentiated steel,

White goods includes appliances and white goods/scrap,

Other metals includes scrap metal, copper, aluminum/steel cans, lead acid batteries, brass, non-ferrous scrap, and undifferentiated metal,

PET (#1 plastic) includes clear PET, green PET, #1 plastic soda bottles, and undifferentiated PET,

HDPE (#2 plastic) includes natural #2 plastic water/milk jugs, colored HDPE, HDPE bags, and undifferentiated HDPE,

Other plastics includes LDPE (#4), polystyrene (#6), ABS, injection mold plastics, and undifferentiated plastics,

Glass includes flint (clear), amber, green, mixed, and undifferentiated glass,

HHW collections include used motor oil, antifreeze, latex paint, oil paint, paint sludge, flammable liquids, freon, drop-'n-swap items, compressed gas, Cl-flammables, solvents, mercury, and household batteries,

Miscellaneous includes waste tires, mattresses and box springs, asphalt, wire and cable, textiles, other fiber, toner cartridges, transparencies, construction debris, demolition debris, fluorescent bulbs, carpet, carpet foam, and electronic scrap,

Unspecified includes undifferentiated curbside and undifferentiated drop-off.

Costs and Revenue

Arizona's solid waste recycling statute (A.R.S. §49-832.C.4.) requires that the following information be reported annually:

- The costs of operating and maintaining recycling programs
- The revenue from the sale or use of recycled materials for existing programs
- The costs avoided in processing or disposal

An analysis of the cost and revenue data reported by government jurisdictions can provide a general idea of the financial aspects of recycling programs in operation around the state. Although this information must be reported by ADEQ in its annual report, jurisdictions are not required to respond to our annual recycling questionnaire. At the time of publication, only 39 out of 102 jurisdictions provided information regarding costs and revenue. The data are insufficient to provide a complete analysis of this issue. The challenges and issues regarding costs and revenue for recycling programs vary greatly, therefore, jurisdictions should not be directly compared. Table 5 provides the information reported by jurisdictions.

Costs of Recycling Programs

The cost of operating and maintaining each recycling program is identified in response to the Recycling Program's annual questionnaire. These costs include, when applicable, land, insurance, equipment, personnel, overhead, consultants, construction, additional procurement programs (purchasing recycled-content materials) and other related costs. Some jurisdictions indicated that the costs reflect several different types of recycling programs, while others stated that costs reflect a specific type of recycling program, such as funding a household hazardous waste event. Also, a jurisdiction's operational expenses may change significantly from year to year due to the purchase of capital equipment.

Jurisdictions reporting this information indicate that costs ranged from as low as \$1,200 per year for the city of Page, to as high as \$9,900,000 for the city of Glendale.

Revenue of Recycling Programs

Funds from the resale of a usable item or the sale of a recyclable item qualify as revenue of recycling programs. The greatest amount of revenue reported was \$11,376,183 from the city of Mesa; showing a profit of more than \$7 million. The total revenue generated statewide, based on the 39 reporting jurisdictions, were \$18,185,480.

Avoided Costs Due to Recycling Programs

Avoided costs are neither revenue nor funds received, but cost savings by diverting solid waste from the landfills. These avoided costs should be considered when evaluating the cost effectiveness of a recycling program. Avoided costs represent what would be paid to landfill, incinerate or otherwise legally dispose of the solid waste. Typically, this estimate is based on the disposal, or tipping fees, that would have been

charged had the solid waste been landfilled, but other landfill operation costs may also be included. For example, landfill operation cost avoidance can reflect the reduction of maintenance on landfill equipment, due to the diversion of such items as scrap metal. It is also important to consider the costs avoided for siting and constructing a new landfill due to the landfill space saved by waste diversion.

A total of \$7,132,601 was realized as avoided costs by those jurisdictions that reported such costs this fiscal year. The avoided costs ranged from \$420 for the city of Avondale to \$2,537,229 for the city of Phoenix.

Table 5 shows the costs, revenue and avoided costs of operating a recycling program in Arizona. Only jurisdictions that reported their data, as requested by the state, are included in this table. Jurisdictions should not be directly compared due to the differences in what each considers costs and revenue.

<i>Table 5: The Costs, Revenue and Avoided Costs of Operating a Recycling Program in Arizona</i>				
Jurisdiction	Population	Operation Costs	Revenue	Avoided Costs
Avondale	40,445	\$22,000		\$420
Bisbee	6,095	\$31,650	\$0	\$62,814
Carefree	3,095	\$2,240	N/L	\$1,000
Casa Grande	27,290	\$154,979	\$84,728	N/L
Cave Creek	3,900	\$2,000	N/L	\$2,640
Chandler	186,875	\$1,476,153	\$127,108	\$384,508
Chino Valley	8,205	\$8,176	N/L	N/L
Cottonwood	9,770	\$22,000	N/L	N/L
Douglas	16,585	\$55,000	\$3,791	\$79,589
Flagstaff	57,700	\$772,128	\$50,000	\$267,679
Florence	17,225	N/L	\$36	\$105,179
Gilbert	122,360	N/L	\$1,5017	\$222,354
Glendale	224,970	\$9,900,000	\$1,230,000	\$396,503
Goodyear	22,820	\$85,924	\$0	\$11,930
Holbrook	4,930	\$22,166	N/L	\$4,606

Table 5: The Costs, Revenue and Avoided Costs of Operating a Recycling Program in Arizona

Jurisdiction	Population	Operation Costs	Revenue	Avoided Costs
Lake Havasu	44,200	\$129,000	\$128,280	\$168,895
Mesa	414,075	\$4,127,000	\$11,376,183	\$677,000
Nogales	20,990			\$10,800
Page	6,975	\$1,200	\$0	\$2,500
Payson	14,155	\$20,000	\$6,480	N/L
Peoria	117,200	\$109,768	\$0	\$12,662
Phoenix	1,344,775	\$4,602,533	\$4,731,768	\$2,537,229
Prescott	35,815	431,242	\$8,208	\$119,190
San Luis	17,090	\$26,520	N/L	\$4,402
Scottsdale	209,960	\$3,550,000	\$124,529	\$510,750
Sierra Vista	38,740	\$87,000	\$30,000	\$156,657
Tempe	159,435	\$1,715,000	\$49,500	\$152,000
Tombstone	1,520	\$6,240	\$0	\$2,679
Tucson	498,305	\$1,719,520	\$84,816	\$456,991
Wickenburg	5,265	\$65,000	\$20,000	\$116,575
Willcox	3,775	N/L	N/L	\$42,277
Winslow	9,550	\$1,514	N/L	N/L
Coconino County	51,115	N/L	\$250	N/L
Graham County	18,610	\$46,300	N/L	N/L
Mohave County	57,740	\$43,298	N/L	N/L
Pima County	313,915	\$637,348	\$80,152	\$173,300
Pinal County	83,575	\$185,511	\$34,634	\$139,332
Yavapai County*	75,915	\$369,758	N/L	\$310,140
Yuma County	59,280	\$126,119	N/L	N/L

N/L means the information was not listed in the report

** Includes Waste Tire Program monies*

Cost/Revenue Comparison

There are many challenges when comparing the costs and revenue of recycling programs. Each jurisdiction does not offer the exact same combination of recycling programs nor financing methods for programs. While one jurisdiction may provide only one recycling program, another may offer a variety of different programs. The types of recycling programs offered range from curbside to drop-off collection, household hazardous waste collection year-round to individual events, greenwaste drop-off to a curbside collection and Christmas Treecycling to white goods and electronic collection.

Some jurisdictions mix their recycling program funding with other solid waste programs, and thus, cannot be identified specifically as recycling costs. Furthermore, debate exists regarding financial issues within the recycling and solid waste industry, due to the range of definitions of revenue, avoided costs and operational costs. Some jurisdictions have contracts with private recycling companies to collect, sort and broker the materials. As a result, these jurisdictions are not privy to complete financial information. The financial figures of the private companies may not be represented in this report. Other jurisdictions may operate a recycling program as well as a landfill. In such a scenario, the avoided costs of paying tipping fees for recycled material that was diverted from the landfill may be viewed as a loss of revenue for the landfill operation and may not be reported. The costs and revenue comparison is only an approximate analysis due to the difficulty in achieving consistent statewide definitions of a recycling budget and types of programs offered. Each jurisdiction should be evaluated separately.

The costs and revenue comparison addresses the financial aspects of recycling; there are also indirect savings and benefits that are difficult for individual jurisdictions to quantify in dollars, but should be considered in overall program evaluations. These include resource conservation, energy savings and pollution prevention.

Recycling Funding Programs and Funded Projects

Pursuant to A.R.S. §49-837 B.1-2, the Recycling Program administers a funding program that provides financial assistance or start-up money to private businesses, non-profit organizations and governmental entities existing or servicing areas within Arizona. Throughout FY 1991 and FY 1992, monies in the project funding program were distributed through the Reduce, Reuse and Recycle Grant (RRR Grant). The funding was awarded to projects that focused on source reduction of solid waste and source reduction education. In FY 1993, the RRR Grant was separated into two types of funding programs: the Waste Reduction Assistance (WRA) Program and the Waste Reduction Initiative Through Education (WRITE) Program.

In an effort to address the difficulties associated with recycling in both rural and urban

communities, the Recycling Program offered several specialized funding programs. In FY 1996, WRA funds focusing exclusively on household hazardous waste projects were made available to local governmental entities. In FY 1997, WRA funds were made available to individuals and/or organizations established or residing in a jurisdiction with a population of 100,000 or fewer. And in FY 1998, another specialized fund was developed to address research and development in the recycling industry. This program was later named the Waste Reduction Assistance Research and Development (WRA R and D) Program.

Since the Recycling Program's inception in 1990, it has provided over \$9.1 million in funding (see Table 6). Public jurisdictions received funding for 93 projects, the private sector (businesses and organizations) received funding for 66 projects, 63 non-profit organization projects were funded and universities and colleges received funding for 12 projects; a total of 234 projects received funding from the program.

Table 6 lists the type of funding programs and the amount awarded during each fiscal year. Funding programs include Reduce, Reuse, Recycle (RRR), Waste Reduction Education (WRE), Waste Reduction Assistance (WRA), Waste Reduction Initiative Through Education (WRITE), Household Hazardous Waste (HHW), Small Community Waste Reduction Assistance (SCWRA) and Waste Reduction Assistance Research and Development (WRA R and D).

<i>Table 6: Funding Programs and Amounts</i>							
Fiscal Year	RRR	WRE	WRA	WRITE	HHW	SCWRA	WRA R and D
1991	\$867,402						
1992	\$640,020						
1993		\$88,331					
1994			\$447,282				
1995				\$210,472			
1996			\$420,242		\$1,217,977		
1997						\$332,509	
1998			\$599,616	\$222,486			
1999			\$547,521	\$258,723			\$186,630
2000			\$841,669	\$253,381			\$81,915
2001			\$715,105	\$181,106			\$160,430
2002			\$721,884.40	\$138,595			
Totals	\$1,507,422	\$88,331	\$4,293,319.40	\$1,264,763	\$1,217,977	\$332,509	\$428,975

Waste Reduction Assistance Program

The focus of the WRA Program is to provide funding to projects that divert significant amounts of material from the solid waste stream, or that represent comprehensive programs designed to achieve high solid waste diversion levels. All projects must be related to one or more of the following: recycling collection, household hazardous waste, electronics and/or material recovery facility. For additional information on the WRA Program or on the following projects, please contact the program coordinator at (602) 771-4174 or, toll free in Arizona, (800) 234-5677, then enter 771-4174.

FY 2002 Waste Reduction Assistance Projects

The FY 2002 WRA project funding was available to private businesses, non-profit organizations and governmental entities existing or servicing areas within Arizona. A total of \$721,884.40 was awarded to 10 projects selected from 37 submitted proposals. The project period began December 2001 and will conclude December 2002. All organizations were required to provide a minimum of 75 percent in-kind or monetary match of the funding award. The following is a brief description of each proposal.

City of Flagstaff – Household Products Collection Center

Rebekah Cadigan
211 W. Aspen
Flagstaff, AZ 86001

Project Award \$199,027

The city of Flagstaff received funds to develop a permanent household hazardous waste (HHW) collection facility to maximize the proper disposal of HHW and to serve as an educational focal point for waste reduction for the residents of Coconino County. The funds will allow the city to build a comprehensive collection facility that will be available to residents on a weekly basis.

Holbrook Clean and Beautiful – Northeastern Arizona Recycling Coalition

Glen Holden
P.O. Box 127
Holbrook, AZ 86025

Project Award \$76,336

Holbrook Clean and Beautiful (HC & B) received funds to purchase recycling trailers with roll-off containers. HC & B will partner with Holbrook, Flagstaff and Winslow, Amfac, Petrified Forest National Park, Arizona Department of Transportation, Concho, Nahata Dziel Chapter and Arizona Clean and Beautiful to develop a recycling infrastructure in northeastern Arizona. HC & B and its partners will provide drop-off locations, storage containers and transportation to recycling centers.

Santa Cruz County – Santa Cruz County Recycling Trailer

Victor Gabilondo

Project Award \$74,477.40

2150 N. Congress Drive, Suite 117

Nogales, AZ 85621

Santa Cruz County received funds to purchase four recycling trailers to increase capacity and efficiency of its recycling program. The trailers, each with five collection compartments, will be located at the county's Tubac, Rio Rico, Patagonia and Sonoita facilities. These locations presently have the highest citizen participation rate for recycling. Currently, each facility has eight to 10 90-gallon poly-carts that are used to collect recyclable materials.

Desert Waste Not Warehouse – Technology Turnaround

Maiola Coleman

Project Award \$72,311

3003 S. Country Club, Suite 181

Tucson, AZ 85713

Desert Waste Not Warehouse (DWNW), an organization dedicated to conserving natural resources through the diversion of computer and related equipment from local landfills, received funds to double the number of computers currently diverted from the Pima County Landfill each year. DWNW will provide additional drop-off locations and also re-distribute working computers to non-profit organizations.

Sedona Recycles – Drop-off Collection System

Daniel Dickey

Project Award \$67,350

2280 Shelby Drive

Sedona, AZ 86351

Sedona Recycles received funds to expand its collection system to make the Verde Valley Recycling Coalition Drop-off Program more efficient. The new collection system will allow Sedona Recycles to service new sites and offer a collection program to the commercial sector. Sedona Recycles will provide bins at four new drop-off sites and larger bins for cardboard and newspaper at six existing sites.

Christmas in April-Valley of the Sun – Commercial Re-blended Latex Paint Program

Dennis Flynn

Project Award \$65,840

2123 S. Priest Drive, Suite 213

Tempe, AZ 85282

Christmas in April received funds to promote the use of re-blended, unused and unwanted latex paint from the commercial and construction industries; thereby reducing the amount of latex paint and materials entering the waste stream.

Christmas in April plans to expand the program by increasing the amount of latex paint and five gallon buckets that are recycled. They will also increase the number of partnerships formed with residential and commercial contractors.

Westech Recyclers, Inc. – Westech-StRUT Transportation Program

Earl Knudsen

Project Award \$55,000

1008 W. Madison

Phoenix, AZ 85007

Westech Recyclers and Arizona Students Recycling Used Technology (StRUT) received funds to develop a system to refurbish and redistribute used computer equipment to participating schools and local businesses. Westech will also conduct outreach activities to schools in outlying areas.

Town of Cave Creek – Community Recycling Program Household Hazardous Waste Collection Event

Brian Miller

Project Award \$42,883

37622 N. Cave Creek Road

Cave Creek, AZ 85331

The towns of Cave Creek and Carefree received funds to hold a community household hazardous waste collection event. The event marks the first such collection for these communities.

Mattera Enterprises Recycling Inc. – Residential and Commercial Recycling Containers

Joseph Mattera

Project Award \$40,000

11130 Garden Grove Ave.

Northridge, CA 91326

Mattera Enterprises Recycling Inc. (MERI) received funds to expand its waste hauling and recycling services to Phoenix, Prescott and the expanding rural areas of northern Maricopa and southern Yavapai counties. MERI, along with their partners, requested funds to purchase recycling containers that will be distributed for residential and commercial recycling.

Southwest Public Recycling Association – Electronics Recycling Collection Event

Ellen Cox

Project Award \$28,660

Tucson, AZ

In an effort to provide Arizona residents with the opportunity to recycle electronic equipment in an environmentally responsible manner, Southwest Public Recycling Association (SPRA) received funds to hold multiple collection events. SPRA will partner with Westech Recyclers, Inc., the city of Tucson/Pima

County HHW Facility, Sedona Recycles and the town of Payson to conduct three electronics collection events, one in each community.

Waste Reduction Initiative Through Education Program

The focus of the WRITE Program is to provide Arizona residents with the information and education needed to increase their awareness of properly reducing and disposing of solid waste and to encourage participation in source reduction, reuse and recycling activities. Education projects may include, but are not limited to: school curricula, workshops, seminars, publications, mail outs, flyers and mass media campaigns. Projects funded through the WRITE Program assist the Recycling Program in its mandate to provide recycling education to the public. For additional information on the WRITE Program or on the following projects, please contact the program coordinator at (602) 771-4865 or, toll free in Arizona, (800) 234-5677, then enter 771-4865.

FY 2002 Waste Reduction Initiative Through Education Projects

The FY 2002 WRITE project funding was available to private businesses, non-profit organizations and governmental entities existing or servicing areas within Arizona. IN July 2001, the Recycling Program awarded a total of \$138,595 to seven recycling education projects. Organizations awarded up to and including \$25,000 were required to match a minimum of 20 percent of the total project cost. Proposals requesting over \$25,000 were required to match a minimum of 35 percent of the total project cost. The maximum funding request was set at \$60,000. The following is a brief description of each project.

Southwest Public Recycling Association – Rural/Remote Community Recycling Technical Assistance

Vivian Swearingen
Tucson, AZ

Project Award \$36,775

Southwest Public Recycling Association (SPRA) proposed to provide technical assistance to 10 remote communities/counties and three regions representing 11 additional communities. SPRA will provide assistance with program development, education, professional training, resource development, marketability of recyclable materials and other important services. SPRA will also hold two recycling coordinators workshops.

Pima County Cooperative Extension – Our Yard Recycling Garden

Cynthia Flynn
4210 N. Campbell Ave.
Tucson, AZ 85719

Project Award \$25,000

Pima County Cooperative Extension proposed to create a recycling garden that promotes the concept of “reduce, reuse and recycle.” The garden will display

recycled content garden products in a real-life setting and demonstrate recycled landscape materials and household waste in four typical residential settings. Visitors to the recycling garden will take away ideas that can be implemented in their own landscapes. The garden will also serve as an information center and clearinghouse for recycling information and literature.

Tucson Family Magazine – Tucson Kids Recycle Calendar

Greg Stiles

Project Award \$22,950

177 N. Church, Suite 200

Tucson, AZ 85701

Tucson Family Magazine proposed to raise the awareness of the importance of recycling among children and their families through the creation of a Kids Recycle calendar. The materials for the calendar will be produced by kids, for kids and will feature a different recycling message for each month.

City of Phoenix Solid Waste Field Services – Solid Waste Management Outreach Education Program

Terry Gellenbeck

Project Award \$18,000

101 S. Central Ave., 5th Floor

Phoenix, AZ 85004

The city of Phoenix proposed to purchase a trailer that will feature solid waste information, interactive displays, models and computer and video systems. These features will bring a “hands on” landfill awareness opportunity to students and to the general public at special events. The displays and models will focus on how land and groundwater can be contaminated through the improper disposal of solid waste. The trailer will vividly demonstrate how proper solid waste management practices can reduce the negative effects on the environment.

City of Tucson Solid Waste Management Department – City of Tucson Elementary Education Outreach Program

Victoria Collier

Project Award \$16,420

4004 S. Park Ave.

Tucson, AZ 85726

The goal of this proposal is to raise children’s awareness and understanding of the city of Tucson’s new curbside recycling program and about recycling in general by providing elementary schools with activities, educational materials and classroom presentations. The city of Tucson will develop teacher-based activities, develop classroom presentations and recruit and train classroom presenters.

Environmental Education Exchange – Online Database

Neil Markowitz

Project Award \$13,500

738 N. 5th Ave., Suite 100

Tucson, AZ 85705

Environmental Education Exchange received funding to develop a database of previously funded WRA and WRITE projects. This database will allow greater access (via the Internet) for the Recycling Program, the general public, potential WRA and WRITE fund applicants, and others to learn more about available funding and previously funded projects. The database will include project descriptions, post-project summaries, and funding program and year.

City of Scottsdale Solid Waste Management– Educational Display Board

Debbie Miles

Project Award \$5,950

9191 E. San Salvador Drive

Scottsdale, AZ 85258

The city of Scottsdale proposed to purchase a lightweight, easy to transport, free standing display unit. The mobile educational display system will make an immediate impact on the public. Educating the public on the importance of recycling and source reduction is the primary focus of the display. This mobile display board will be able to be broken down into smaller units that will be displayed at multiple locations (such as schools, libraries and city buildings) at one time.

Public Education and Outreach Activities

The education that the Recycling Program has offered since 1990 has benefitted non-profit organizations, private companies, governmental agencies and the general public. The benefits have been received through the direct and indirect effects of recycling and source reduction workshops and conferences, demonstrations of products made from recycled materials and the distribution of recycling education materials throughout the state.

The Recycling Program focuses on public education to encourage participation in source reduction, reuse and recycling of solid waste. Although the fundamentals of recycling education are often centered around the implementation of the 3Rs (reduce, reuse, recycle), the Recycling Program also identifies other educational topics like the importance of buying products made from recycled materials, properly disposing of household hazardous waste, composting and preventing illegal dumping. When the Recycling Program communicates the importance of recycling, it is presented as a solid waste management option with the ability to conserve our natural and economic resources, reduce the need for new landfills, reduce pollution and create economic support for the recycling industry.

In addition to the WRITE funded projects, the Recycling Program administered

various recycling education projects throughout the past year. According to A.R.S. § 49-833 B., the Recycling Program is required to provide public education through the methods discussed below.

Recycling and Source Reduction Techniques

Educational and Technical Assistance Opportunities

During FY 2002, the Recycling Program provided educational and technical assistance to jurisdictions, businesses and the general public through the distribution of brochures, manuals, “how-to” guides, case studies of specific recycling source reduction programs and other related educational materials. Information for both the WRA and WRITE Programs was provided through presentations to initiate and/or support the establishment of waste reduction and recycling programs. The Recycling Program provided on-site assistance to schools and businesses to initiate waste reduction options when working with waste haulers and conducting waste audits.

The structure of the state’s recycling efforts are community-based. Many jurisdictions offer recycling as part of their solid waste management program. However, if a jurisdiction does not have the infrastructure to offer recycling collection, non-profit organizations have assisted and organized grassroots recycling drop-off programs. In order to provide detailed information to the public regarding community-based recycling programs, the Recycling Program maintains a list of local contacts, called public recycling program coordinators list. A copy of this list is available at www.adeq.state.az.us/envIRON/waste/solid/download/coords.pdf. This list provides points of contact for 102 jurisdictions throughout Arizona. The Recycling Program works with the recycling coordinators to provide assistance with their recycling efforts, coordinate between other jurisdictions (if necessary), develop educational materials and exchange knowledge of available recycling opportunities. For general public inquiries, the Recycling Program provides an overview of the statewide recycling efforts and how they correlate with a specific community’s efforts. However, if community-specific information, such as a current list of accepted recyclables or a schedule of pick-up days is requested, the public is encouraged to call the community’s designated recycling coordinator.

When residential curbside recycling programs are not available to households or apartment complexes, the Recycling Program advises the public to create their own system of collecting recyclables at home and locating a nearby recycling drop-off site. In addition, residents are encouraged to call 1-800-CLEANUP or visit www.CLEANUP.org, a statewide recycling hotline and Web site, to locate the closest drop-off site for their recycling needs.

To increase the awareness of household hazardous waste (HHW) disposal locations, the Recycling Program continues to update a referral listing of

locations within each county. This listing includes transfer stations, local businesses, special HHW collection events and permanent HHW facilities that will accept used paint, motor oil, antifreeze, batteries and other types of HHW for reuse or proper disposal options. In addition to the referral list, the Recycling Program recommends other waste reduction and reuse options for HHW. For example, old paint can be donated to neighbors, theater groups or beautification projects that use old paint to cover graffiti. Used oil and antifreeze can be returned to most automotive parts and supply stores. The Recycling Program has referred businesses with larger quantities of batteries, fluorescent lights and solvent-based products to the hazardous waste handlers in the area. The Recycling Program also encourages communities that lack the opportunity to properly dispose of HHW to apply for funding assistance to institute HHW events or permanent facilities.

In 2001, the Environmental Education Exchange (EEE) received funding to develop a database of recycling projects that previously funded recycling projects to be available on the ADEQ Web site. This database is located at www.adeq.state.az.us/enviro/waste/solid/projects/index.php.

Technical Workshops and Seminars on Recycling and Source Reduction

The Recycling Program cooperatively worked or contracted with other agencies, non-profit organizations and/or funding recipients to sponsor or co-sponsor workshops and conferences as a means to provide recycling and source reduction program guidance.

The Recycling Program co-sponsored the following workshops and seminars in FY 2002.

Recycling Coordinator's Training Workshops

The Recycling Program co-sponsored the Southwest Public Recycling Association's *Recycling Coordinators' Training Workshops*. The workshops were held on March 21 and 22, 2002 in Prescott, and April 25 and 26, 2002 in Sierra Vista, Ariz. The workshops provided local communities, private businesses and non-profit organizations with the tools and information they need to create, develop and expand efficient and sustainable recycling operations.

Arizona Recycling Coalition's Recycling Forums

The Recycling Program participated in the Arizona Recycling Coalition's (AzRC) recycling forums. The forums were held once each quarter in a rural community. At each meeting, members of AzRC and the community met to discuss marketing recyclable materials, funding opportunities and technical and educational assistance programs.

Recycling and Source Reduction Database and Hotline

As stated in A.R.S. §49-833 B.3, the Recycling Program is required to administer a

recycling and source reduction database and hotline that provides referral services to waste generators. Since 1990, the Recycling Program has been compiling a database of recycling facilities and drop-off locations for Arizona residents to refer to for their recycling needs. Developing, updating and maintaining a database has been an ongoing project for the Recycling Program. Outreach events, such as site visits and regional conferences, create the opportunity for staff to acquire information on new and existing recycling facilities to add to the database.

From 1992 through 2002, the Recycling Program has worked with Cleanup, Inc., d.b.a. the Environmental Recycling Hotline (also known Earth 911), to make this recycling database available to the public. By using the 1-800-CLEANUP phone number and Web site, the Recycling Program fulfills the statutory requirement of administering a database and hotline.

In Arizona, many communities do not have the opportunity to participate in residential curbside recycling programs. By promoting the use of the hotline system, the Recycling Program has increased the public's knowledge of local area waste reduction efforts and recycling drop-off sites.

The Recycling Program continues to distribute promotional items such as pencils, rulers and educational wheels that contain the hotline's phone number and Web site. These items are distributed at outreach events to encourage to the public to use the hotline for recycling and environmental information.

In January 2001, a revised contract was established between the Recycling Program and Cleanup, Inc. to focus on promotional work emphasizing the use of the hotline phone number and Web site. The promotional campaign designed as part of this contract focused on waste reduction and recycling education in the rural communities.



The hotline started as a computerized interactive phone system that provided the locations of local drop-off facilities based on a five-digit zip code. Callers could access several sections of information, including the nearest recycling centers, information on household hazardous waste, ways to reduce, reuse and recycle and purchase products made from recycled materials.

As the hotline system advanced, the Recycling Program provided funding for promotional and educational efforts to increase public awareness for the Environmental Recycling Hotline services. Subsequent funding also provided for a part-time staff person at Cleanup, Inc. to update the statewide recycling drop-off locations on the hotline database.

Through the years, other organizations provided support to Cleanup, Inc. to form a public/private partnership that now includes local and national sponsors offering financial, technical, and promotional assistance. With the support of both the public and private sectors, this interactive phone and Internet system has grown in its capacity to operate free to the user.

In 1995, EPA awarded Environmental Technology Initiative (ETI) Grant funding to ADEQ to provide Cleanup, Inc. with assistance for the expansion of the Hotline program nationwide. As this nationwide expansion took place, residents in each state were able to dial the 1-800-CLEANUP phone number to receive referral services for their community.

The Environmental Recycling Hotline, also known as Earth 911, has since created a Web site (www.CLEANUP.org) to allow Arizona and all other states to customize information for access through the Internet. Specific environmental numbers and links on the Web site can be tailored for each community. A virtual library has been developed to house promotional materials. These materials are available to any organization.

Promoting Recycling and Use of Recycled Products

Each new year seems to generate more interest in environmental education and awareness. During FY 2002, the Recycling Program participated in numerous outreach events to promote recycling, waste reduction and the use of recycled products. The Recycling Program traveled to local schools to discuss the 3Rs with children in kindergarten through 12th grade levels. Recycling presentations were also made during conferences and civic group meetings. Each presentation covered the basic message of reduce, reuse, recycle and buy recycled.

Recyclable materials are often brought to the presentations to demonstrate which materials can be recycled in their community and why those materials may differ from community to community. The standard recycling symbols, illustrated to the right, are often used to indicate the recyclability of certain types of packaging. The three chasing arrows (Figure 3) refer to packaging that is recyclable. The three chasing arrows enclosed in the black box (Figure 4) represent packaging that is made from recycled materials and is usually accompanied with the percentage of recycled content material used in the remanufacturing process. The differences between the symbols are explained in presentations and pointed out on the actual products.

Figure 3

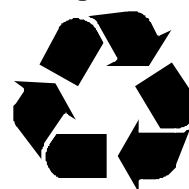


Figure 4



Recycled content products such as carpet made from recycled plastic soda bottles and playground equipment made from recycled plastic milk jugs are showcased at these presentations to increase recycled product awareness. The concept

of buying recycled products is emphasized to illustrate that recycling not only includes the collection and sorting of recyclables, but it also includes the remanufacturing of recycled products that need to be purchased by the public in order to close the loop of recycling. The audience is provided with an explanation of the many benefits of reducing, reusing and recycling.

Promotional items, such as rulers, pencils, bookmarks, brochures and stickers made from recycled materials, have been distributed in classrooms to further demonstrate the availability of these products. Most of these items contain the 1-800-CLEANUP hotline phone number and/or www.CLEANUP.org Web site for future reference.

Outreach Events Promoting Recycling: America Recycles Day

Since 1997, America Recycles Day has been nationally celebrated on Nov. 15. This year's theme, "America Recycles Day – A Great Time to Renew Our Commitment of Recycling," focused on building consumer demand for recycled products and to continue to educate others on the environmental and economic benefits of recycling. People were asked to purchase recycled-content products and recycle more by completing a pledge card with their name, address and how they would make a change in their daily routine. All the pledge cards were forwarded to Washington, D.C., where a national drawing was held. Winners from this year's event won a variety of products made from recycled content materials. For more information on the national campaign, please visit <http://americarecyclesday.org>.



State recycling organizations were encouraged to lead statewide efforts in conjunction with America Recycles Day by involving communities in recycling events, contests, races and activities designed to promote awareness about recycling and buying recycled content products. A total of 44 states, the District of Columbia, two territories and Mexico participated.

Promotion of the sixth annual Arizona/America Recycles Day included state-wide advertisements in local newspapers, on-site promotions and contests. The Arizona/America Recycles Day prompted nearly 8,000 Arizonans to pledge to buy recycled products.

Earth Day 2002

The Recycling Program celebrated Earth Day 2002 by traveling to events located throughout the state during the month of March and April. The promotional events were planned and coordinated by jurisdictions, non-profit organizations and elementary schools.

Computer Recycling – StRUT

The Recycling Program partnered with valley-wide public jurisdictions, non-profit organizations and local businesses to promote the Students Recycling Used Technology (StRUT) Earth Day Computer Recycling Collection Event. Valley residents were invited to donate their old and obsolete monitors, printers and CPUs to the StRUT program to be refurbished for use by non-profit organizations and schools. The event hosted collection efforts at various drop-off sites throughout the valley, at which more than 1,210 residents dropped off more than 6,950 computers and related equipment to be refurbished or recycled.

Electric Light Parade

The Recycling Program, the city of Phoenix, A to Z Rentals, the United States Forest Service and Urban Forestry sponsored a float in the 2001 Arizona Public Service's Fiesta of Lights Electric Parade. The float, "Sleighbing Down Central" was adorned with over 23,000 lights, recycled bikes, a dozen cut and potted Christmas trees and mascots. Over 36,000 Christmas Treecycling tags were distributed along the three mile parade route. The Christmas Treecycling red tag program was promoted in communities statewide.

Grocery Bag Reuse Project

For a third year, the Recycling Program worked with local grocery stores and the *Bear Essential News for Kids* publication to promote the reuse of paper grocery bags. Teachers were encouraged to borrow paper grocery bags from their local grocery store to provide to their students for decorating. The students creatively decorated the bags with Earth Day messages to show that kids care about the environment. Teachers returned the decorated bags to the grocery stores, and on Earth Day (April 22), customers received their groceries in the bags. As in the past, the project alerted students and grocery store patrons to the benefits of reducing trash through reusing and eliminating the need for new grocery bags.

Quarterly Recycle Arizona Newsletter

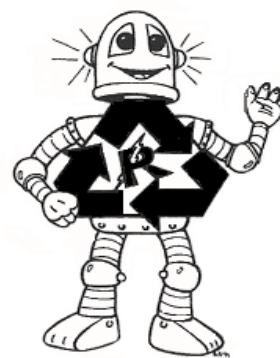
The Recycling Program has developed its own quarterly newsletter, *Recycle Arizona*. The newsletter contains information on the WRITE and WRA Programs, a description of projects recently awarded funding, America Recycles Day, Christmas Treecycling, Earth Day activities, upcoming events and other related statewide recycling information.

Bear Essential News for Kids

In October 1999, the Recycling Program began working with the publication, *Bear Essential News for Kids*. This year, 10 issues featured a full page lesson plan for elementary students. "Recyclebot," was specifically designed to teach waste reduction

habits to a younger generation of earth-friendly crusaders.

The full page design includes a masthead entitled “Recycle Arizona,” and features new exercises each month that teach the concepts of reducing, reusing, precycling, recycling, composting and buying recycled products. Response to the “Recycle Arizona” page has been measured through mail-in surveys and through phone inquiries. The elementary students make up the primary audience, while teachers and parents are indirectly targeted. Teachers are able to obtain recycling ideas for classroom projects and parents are exposed to the information when they read the publication with their children.



Recycling Program's
Recyclebot

Recycling and Source Reduction Public Education and Advertising Programs

The Recycling Program, through the WRITE Program, has funded many recycling education and awareness programs that have been successfully implemented throughout Arizona. Often, communities do not have the financial or personnel resources available to produce recycling education materials. The Recycling Program has been able to assist these communities with various curricula and outreach materials.

Recycling education resources funded through the Recycling Program are required to be transferrable to other communities to support recycling and/or waste reduction efforts. The Recycling Program has developed an inventory of factsheets, brochures, video tapes, manuals and slides that have resulted from previously funded projects that are available to schools, municipalities, non-profit organizations and the general public. This inventory list provides the Recycling Program with an understanding of what is currently being used for the purpose of promoting recycling and what will need to be developed in the future. This inventory has been added to the Recycling Program's Web page at www.adeq.state.az.us/environ/waste/solid/recycle.html.

The Arizona Recycling Emblem

The Arizona recycling emblem is composed of a cactus with the three chasing arrows, an oval frame that surrounds the cactus, and bears the slogan “Arizona Cares: Reduce, Reuse, Recycle.” It provides a recognizable symbol for recycling efforts and education in the state. To promote the use of the Arizona recycling emblem on a continual basis, the Recycling Program encourages other recycling organizations to use the emblem to create a uniform look for Arizona's recycling image. When possible, promotional items, such as rulers, pencils, pens, lapel pins and stickers, include the Arizona recycling emblem.



Recycle Guys Promotional Campaign

In 2001, the Recycling Program joined a nationwide effort to promote reduce, reuse and recycle through use of a specific media campaign. The “Recycle Guys” is a very successful campaign designed by the South Carolina Department of Environmental Quality Control.



The “Recycle Guys” are various characters that represent the different types of recyclables. The Recycling Program has brought these characters to Arizona by purchasing the licensing rights to radio and television advertisements.

Arizona Department of Commerce’s Recycling Market Development Program

The Arizona Department of Commerce’s (ADOC) Recycling Market Development Program was created to develop local recycling markets for Arizona’s recycling programs and assist in the creation of jobs and capital investment by recycling-based businesses. Specifically, the program encourages the use of recycled materials as a manufacturing feedstock by new and existing Arizona businesses, attracts recycling-based businesses to the state and assists existing Arizona recycling-based companies in their business expansions. In order to accomplish these goals, the program works closely with public, non-profit and private economic development and recycling officials. Funding for the program is provided by ADEQ’s Recycling Program.

Arizona Recycling Market Development Program Background

Since 1994, the Arizona Recycling Market Development Program has assisted numerous recycling-based businesses that have located new plants or expanded existing operations in Arizona. These companies have created over 2,700 jobs and their combined capital investment exceeds \$425 million.

The Arizona Recycling Market Development Program was launched in 1992 with the passage of Senate Bill 1287, which created a recycling market development program housed jointly at ADOC and ADEQ. The program is funded by a portion of the 25 cent per ton landfill user fee surcharge.

In 1993, the state legislature adopted the Arizona Environmental Technology Bill (A.S.R. 41-1514.02) creating the Environmental Technology Office and providing significant tax benefits to large recycling companies that committed to an Arizona location through mid-1996. In 1994, EPA awarded ADOC a “Jobs Through Recycling” (JTR) grant to support the state’s recycling market development efforts.

JTR grant monies were used to fund the 1996 Arizona recycling market development study, which was jointly funded by EPA, ADEQ and ADOC. The study was the first of its type in the nation to provide comprehensive information on the growth and development of a statewide recycling economy. The study provided baseline information designed to assist in the attraction of key recycling businesses and to help existing operations expand in Arizona. According to the study, Arizona's recycling industry contributed more than half a billion dollars to the state's gross state product in 1995. During the same year, the recycling industry also accounted for \$616 million in direct capital investment and 3,427 direct jobs.

In 1996, ADOC received a second JTR grant to promote targeted recycling business development in rural and economically depressed areas of the state. ADOC received its third JTR grant in late 1998 for the Rural Recycling Business Initiative (RRBI). This project, which will be completed in early 2003, will provide the information necessary to establish recycling businesses in rural and tribal areas of the state. Specific development tools include geographic information databases, online and printed media that will identify and link regional waste streams, eco-industry sites, and sources and users of recyclable materials. Tools will be posted on the Arizona Recycling Coalition's Web site and marketed to assist local economic developers, attract new industries, and help to mentor similar efforts across the country.

In 2001, an update of the 1996 Arizona recycling market development study was undertaken. According to the study, recycling supports 839 business establishments in the state, employing 10,603 people. These direct recycling activities pour \$263 million in payroll and \$1.3 billion in sales into Arizona's economy each year.

As a result of ongoing financial support from and a strong partnership with ADEQ's Recycling Program, Arizona's recycling market development program is considered a model throughout the country.

FY 2002 Recycling Market Development Results

Conference and Project Sponsorship

- Regional recycling forums in Show Low – The Department of Commerce co-sponsored an Arizona Recycling Coalition regional recycling forum held Oct. 26, 2001 in Show Low. The forum covered existing regional recycling programs, collection options, markets and infrastructure, and recycling market development issues. The forum drew about 30 participants, who ranged from private recyclers to public recycling officials.
- Recycling coordinators training workshops – The Southwest Public Recycling Association organized two training sessions for the state's recycling coordinators. The Department of Commerce presented on recycling markets, transportation and recycling economic development at both workshops in Sierra Vista and Prescott.

- Industries of the future – In conjunction with the Department of Commerce's Energy Office, an Arizona Industries of the Future program was designed and will be launched in fiscal year 2003. Through a grant from the U.S. Department of Energy, four Arizona industries – agriculture, aluminum, forestry and mining – will be targeted to improve energy efficiency and waste reduction. The forestry efforts will focus on developing a sustainable forestry industry in Arizona through the use of waste wood and small-diameter timber in the production of new products. During the year, staff coordinated with the Greater Flagstaff Forests Partnership, Arizona Sustainable Forestry Initiative and Environmental Economic Communities Organization to better understand their role in the issue and assist in the design the program.
- Recycling market development study update – A \$50,000 request for proposal was awarded to R.W. Beck to update the 1996 recycling market development study. Commerce administered the study, with funding from ADEQ. The purpose of the study was to conduct an updated economic assessment of the impact of the recycling market development infrastructure on Arizona employment, income and tax base. The initial economic assessment has been completed and the consultant will provide recommendations on state recycling incentives and policy. According to the study, recycling supports 839 business establishments in the state, employing 10,603 people. These direct recycling activities pour \$263 million in payroll and \$1.3 billion in sales into Arizona's economy each year.

Marketing and Outreach

The Recycling Market Development Program assisted ADEQ with its annual survey of existing collectors, processors, brokers and end users of recycling materials. The survey data is used to calculate the state's recycling and diversion rates.

In addition, Recycling Market Development Program staff participated in the following events to promote recycling market development efforts in Arizona and highlight the state as an ideal recycling business location:

- Governor's Rural Development Conference – Rio Rico (Sept. 2001)
- Arizona Recycling Coalition Rural Recycling Roundtable – Show Low (Oct. 2001)
- SPRA Annual Recycling and Market Development Conference – Tucson (Nov. 2001)
- National Recycling Congress – Seattle (Jan. 2002)
- Electric Utilities Environmental Conference – Tucson (Jan. 2002)
- National Center for American Indian Enterprise Development Workshop (Feb. 2002)
- International Symposium on Electronics and the Environment/Electronics Recycling Summit – San Francisco (May 2002)
- Marketing trip (met with companies and site selection consultants) – San

Francisco area (May 2002)

Program staff also participated in various recycling and related organizations to advance recycling market development activities in the state, including:

- Arizona Recycling Coalition, board member
- Arizona Association of Industries, Environment, Health & Safety Committee, participant
- Arizona Environmental Technology Industries Cluster, member
- Arizona Chapter, U.S. Green Building Council, founding member
- Arizona Environmental Leadership through Mentoring, board member
- City of Phoenix Landfill Siting Study, Citizen's Advisory Committee member
- Maricopa Association of Governments, Solid Waste Advisory Committee member
- Arizona Association for Economic Development, member
- Valley Recycling Coordinators Group, member

In addition, staff visited numerous local communities, both urban and rural, and tribal nations to educate and assist local economic development officials and community members in their recycling economic development efforts. Specific community tours included Bullhead City, Flagstaff, Gilbert, Payson, Phoenix, Prescott, Prescott Valley, Surprise and Yuma.

Business Development and Technical Assistance

The Recycling Market Development Program provided a range of assistance to more than 80 companies and entrepreneurs in the fiscal year. Assistance included site location assistance, identification of financing options, permitting assistance, recyclable supply stream analysis, networking, market research and cost of doing business in Arizona and incentives information. Six of the companies announced the relocation or expansion of their business into Arizona or expansion of existing Arizona operations. They will create 510 new jobs in the state within three years and make capital investments exceeding \$38 million. In addition, these businesses will divert over 94,000 tons of secondary material from Arizona's landfills annually. Recyclables handled by these companies include fiber (paper), glass, metals, construction and demolition debris, plastics, electronics and wood. The companies include:

Abitibi Consolidated – Arizona's largest end user of recyclable fiber in the production of newsprint, Abitibi-Consolidated, acquired a Chandler-based material recovery facility, Valley Recycling, to provide a reliable supply of raw material. The company also rolled out an extensive drop-off program in locations throughout greater Phoenix.

Environmental Forest Solutions – Using the waste wood from companies involved in producing product from small diameter timber, this Eager company will operate a 3.5 megawatt co-generation biomass electric plant. The operation

will produce enough electricity for 3,000 homes.

Gold Circuit – A leading company in the field of asset recovery, it is involved in the re-marketing, recycling, reselling and disposal of all types of computer and communication equipment. A consolidation of five facilities in Tempe into a new Chandler corporate office and asset recovery operation allowed for a significant expansion and greater efficiencies. Specifically, this facility tests, cleans and upgrades old electronics equipment and re-markets them. Items that are not re-marketable are sent to the Casa Grande recycling operation.

Gold Circuit – The Casa Grande operation includes a state-of-the-art technology to mechanically de-construct computer monitors and other computer components. The materials from this process (glass, plastic and metals) are completely recycled. The facility is designed to properly handle CRT's and is the largest and most advanced facility west of the Mississippi River.

OTTO Industries, Inc. – This multi-national company is the largest manufacturer in the world of waste and recycling two- and four-wheeled containers. They are a supplier to Allied Waste Industries, the second largest waste management company in the U.S. Based on customer specifications, they will use recycled content in the production of their containers.

U.S. Gypsum Company – A new facility in Glendale will produce joint compounds and texture compounds and act as a distribution center for construction products including those containing recycled content.

Western Container Corporation – Western Container Corporation is dedicated to being the premier manufacturer of PET containers for the Coca-Cola bottling system. The new facility in Tolleson will produce plastic containers containing recycled content. In 2001, Coca-Cola incorporated the equivalent of 7.5 percent recycled content resin into its plastic beverage containers in North America.

Fiscal Year 2003 Projects

Fiscal Year 2003 Goals

- Continue to provide leadership in establishing a “critical mass” of recycling-based industries in Arizona.
- Facilitate the growth and development of complimentary industry clusters that recycle and reuse waste streams, especially in rural areas.
- Act as a clearinghouse for information and contacts to enhance recycling market development efforts in Arizona.
- Work to identify and expand supplies of recyclable raw materials for existing and new businesses.
- Coordinate with other organizations to help small recycling-based businesses access capital.

Used Oil Recommendations

The annual report is required by A.R.S. §49-832.C. to include recommendations on the feasibility of maximizing the use of re-refined oil for state lubrication needs¹ and the state's use of used oil as the oil feedstock of re-refiners.

Use of Used Oil for the State's Lubrication Oil Needs

As was first reported in the 1996 annual report, automobile warranties do not prohibit the use of re-refined (recycled) oil for engine lubrication. Auto manufacturers and the oil industry do not distinguish between re-refined oil and virgin oil. Many brands of lubricating oil are sold in containers that indicate a portion of the oil is re-refined by displaying the recycled content symbol. However, as there is no recognized distinction between re-refined and virgin oil, re-refined oil may be purchased in a container that does not identify its contents as re-refined. Therefore, consumers may be purchasing recycled content oil without realizing it.

Figure 5: The American Petroleum Institute donut and starburst symbols. Lubricant packages displaying these symbols meet all auto warranty standards.



Guidelines set by the American Automobile Manufacturers Association, the American Petroleum Institute, the Society of Automobile Engineers, the American Society of Testing Materials, and the Chemical Manufacturers Association do not distinguish between re-refined oils and virgin oils. In addition, all three major United States automobile manufacturers (Ford, General Motors and Chrysler) recognize that re-refined oils meet the performance

criteria in their warranties. However, neither all re-refined nor virgin oils meet these industry standards. Engine oils must be licensed indicating that they meet the current American Petroleum Institute (API) designations to guarantee performance and a valid warranty. Consumers must look for the API donut or the starburst symbol (see figure 5) on the oil container to be sure the oil they are purchasing meets warranty standards.

Though foreign auto makers as a group have not officially announced they recognize the use of re-refined oil for lubricating needs in their products, foreign manufacturers do not prohibit their use. In fact, Mercedes Benz installs re-refined oil in every new car manufactured in Germany and South Carolina. We recommend that concerned consumers make inquiries to individual foreign auto makers to allay uncertainties. The cost of re-refined oil has become competitive with virgin oil. In 1994, the U.S. Postal Service used re-refined oil in 105,600 vehicles and saved up to five cents per

¹The information contained in this section was obtained from "Re-refined Oil"; the Buy Recycled Business Alliance, 1996.

gallon. Therefore, re-refined oil now exists that meets the warranty requirements of automobile manufacturers and has become competitive in price with virgin oils. With this in mind, the Arizona Recycling Program encourages the continued use of American Petroleum Institute licensed re-refined oil as a lubricant in the state's fleet vehicles and its use by the public at large.

The Use of This State's Used Oil by Re-refiners or as a Lube Stock

Quarterly and annual reports submitted to ADEQ's Solid Waste Section from the used oil industry in Arizona indicate that 17,929,579 gallons of used oil were collected during the 2001 calendar year. This is a decrease of 11 percent over the 2000 calendar year, but an 8 percent increase over the 1999 calendar year. It is believed that the decrease from the previous year is the result of some double counting during the year 2000. However, the 8 percent increase over the past two years is consistent with the growth rate of Arizona's population. Table 7 gives the breakdown of where the recovery used oil was diverted to and for what the oil was used.

The industry re-used 11,175,123 gallons of used oil in Arizona. The vast majority of this, 11,115,854 gallons, was burned in asphalt production, concrete production and energy recovery. The remaining 59,269 gallons were recycled as form oil¹. Therefore, by the definition of recycling given in A.R.S. §49-831.21, only 0.3 percent² of the oil collected in Arizona was recycled within the state. The Arizona used oil industry exported 6,754,456 gallons of used oil to California, Idaho, Indiana, Oklahoma, Nevada, New Mexico and Texas. Burning, including the use of the oil as bunker fuel³, consumed 2,530,357 gallons, while 4,224,099 gallons were recycled by re-refining the oil for lubrication applications. By combining the form oil produced in Arizona with the re-refined lubricant stock produced outside of the state, a total of 4,283,368 gallons collected from sources in Arizona was recycled. This results in a recycling rate for used oil of 24 percent. This is an increase of 3 percent over the previous high rate of 21 percent during the year 2000. The increase is the result of a steady increase in the amount of used oil being exported to Indiana for recycling.

Table 7 depicts the uses of used oil collected in Arizona during the 2001 calendar year. States to which used oil collected in Arizona was sent for diversion are listed on the left, with uses of the oil across the top. Re-refined oil is returned to use in the form of lubricants. Form oil coats the inside surface of the forms and molds used to shape concrete structures in the construction industry. The oil lubricates the inside surface

¹Form oil is used to coat the inside surface of the forms and molds used to shape concrete structures in the construction industry. The oil lubricates the inside surface allowing the forms to be removed easily once the concrete has hardened.

²Percent of used oil recycled in Arizona is equal to amount recycled as form oil (59,269 gallons) divided by the total amount collected in Arizona (17,929,579 gallons) multiplied by 100.

³Bunker fuel is the term used for oil that is converted to fuel for cargo and other ships.

allowing the forms to be removed easily once the concrete has hardened. Bunker fuel is used by cargo ships, barges and other ships. Figures are reported in gallons.

<i>Table 7: Uses of Used Oil Collected in Arizona During the 2001 Calendar Year</i>							
Use	Re-refiners	Form Oil	Recycled Subtotal	Burned for Energy	Bunker Fuel	Diverted Subtotal	Total
Arizona		59,269	59,269	11,115,854		11,115,854	11,175,123
California					353,366	353,366	353,366
Idaho				48,000		48,000	48,000
Indiana	4,224,099		4,224,099				4,224,099
Oklahoma					4,742	4,742	4,742
Nevada				112,220		112,220	112,220
New Mexico				2,005,229		2,005,229	2,005,229
Texas				6,800		6,800	6,800
Total	4,224,099	59,269	4,283,368	13,288,103	358,108	13,646,211	17,929,579

Recycling Opportunities, Impediments and Disincentives

The Arizona Solid Waste Recycling Act of 1990 (A.R.S. §49-832.C.6.) requires that recycling opportunities impediments and disincentives be reported annually. This section relates the most common of these mentioned by respondents to the FY 2002 annual waste reduction and recycling questionnaire. Opportunities that will be discussed first may be useful to communities considering the implementation of a recycling program. The Arizona Recycling Program closely monitors impediments and disincentives to direct resources toward problems that inhibit the growth of recycling in the state. It is important to note that this information is subjective and reflects the opinions and experiences of the respondents.

Opportunities that Encourage Recycling

The greatest opportunities for recycling are existing programs, special collection events and community education programs. A complete list of the stated opportunities and incentives, as well as a list of the reporting jurisdictions, is provided in Table 8.

Existing Program Opportunities

The most frequently identified opportunity or incentive to recycle is the availability of existing programs. Jurisdictions stated that drop-off sites,

greenwaste collection, curbside collection and white goods collection programs provided the greatest opportunity for their community to recycle.

Special Collection Events

Another identified opportunity or incentive to recycle is the availability of special collection events. The Christmas tree collection and household hazardous waste (HHW) collection events are great ways to get the community involved with recycling. Many of the Christmas trees are collected, and shredded to produce mulch for the community. Several communities provide annual curbside pickup event in an effort to provide an opportunity for their residents to recycle their trees. Some materials from HHW collection events are reconditioned and donated locally for reuse.

Community Involvement Programs

The community involvement programs uses literature to improve awareness of recycling opportunities available locally, and presentations in schools and other locates to educate people about the recycling process. In some communities, brochures were produced to direct Arizona residents to recycling opportunities. Recycling media campaigns in newspapers, on television and radio were developed to bring recycling awareness.

Table 8 contains a list of opportunities and incentives to recycle in Arizona as identified by local jurisdictions within the state. The number of jurisdictions identifying each opportunity is given in the middle column. The jurisdictions identifying the opportunity are given in the right column. Subcategories are given if several jurisdictions identify similar opportunities or incentives.

<i>Table 8: Opportunities and Incentives to Recycle in Arizona, as Identified by Local Jurisdictions in the State</i>		
Opportunity or Incentive	No.	Jurisdictions
Program Type		
Drop-off location	21	Avondale, Bisbee, Casa Grande, Chandler, Cottonwood, Florence, Fountain Hills, Goodyear, Huachuca City, Lake Havasua City, Mesa, Page, Payson, Sierra Vista, Tucson, Wickenburg, Willcox, Winslow, Cochise County, Coconino County, Pinal County

Table 8: Opportunities and Incentives to Recycle in Arizona as Identified by Local Jurisdictions in the State

Opportunity or Incentive	No.	Jurisdictions
Greenwaste/ compost program	15	Cottonwood, Flagstaff, Gilbert, Kingman, Mesa, Page, Phoenix, San Luis, Scottsdale, Sierra Vista, Tucson, Wickenburg, Willcox, Pima County, Yavapai County
Curbside collections	8	Casa Grande, Chandler, Gilbert, Lake Havasua City, Mesa, Phoenix, Scottsdale, Tucson
White goods collection	6	Florence, Mesa, Phoenix, Scottsdale, Sierra Vista, Yavapai County
Home composting	5	Avondale, Mesa, Phoenix, Scottsdale, Cochise County
Tire collection	5	Cochise County, Graham County, Pima County, Yavapai County, Yuma County
Commercial program	2	Mesa, Tucson
Bicycle program	1	Chandler
Used oil collection	1	Florence
Offering Organizations		
Non-profit organizations	9	Coolidge, Florence, Holbrook, Lake Havasu City, Wickenburg, Gila County, Graham County, Pinal County, Yuma County
Private companies	6	Fountain Hills, Prescott, Surprise, Graham County, Navajo County, Pima County
Boy or Girl Scout troops	2	Chandler, Navajo County
Special Collection Events		
Household hazardous waste collection events	13	Avondale, Cottonwood, Goodyear, Mesa, Phoenix, Scottsdale, Sierra Vista, Willcox, Cochise County, Mohave County, Pima County, Pinal County, Yavapai County

Table 8: Opportunities and Incentives to Recycle in Arizona as Identified by Local Jurisdictions in the State

Opportunity or Incentive	No.	Jurisdictions
Christmas tree recycling	8	Avondale, Cottonwood, Florence, Fountain Hills, Goodyear, Kingman, Sierra Vista, Wickenburg
Community Involvement Programs		
Community education program	9	Chandler, Cottonwood, Goodyear, Page, Phoenix, Scottsdale, Tucson, Coconino County, Pima County
In-office recycling	6	Chandler, Goodyear, Mesa, Sierra Vista, Tucson, Pima County
Multi-family recycling	1	Mesa
Partnerships		Goodyear, Avondale, Litchfield Park, Tolleson, Buckeye, Glendale
Commercial recycling	2	Chandler, Mesa
Community involvement	2	Douglas, Mesa

Impediments and Disincentives to Recycling

The impediments and disincentives fall into four main categories, financial impediments, market alternative development, infrastructure and logistical problems and community education development. Financial concerns are, by far, the most frequently identified impediment to recycling. A complete list of the impediments and disincentives, as well as a list of the reporting jurisdictions, is provided in Table 9.

Financial Impediments

Financial impediments were identified by jurisdictions as the greatest impediment. This is consistent with the results from the past five years. The top financial concerns were the costs associated with starting and maintaining a recycling program, a lack of resources available for recycling programs and transportation costs. These are all legitimate issues that are challenges to the current locations of recycling processors and end-users. Other impediments were little or no revenue generated from recycling, volume of material and the instability of the market prices.

Market Alternative Development

Many jurisdictions identified that the end market and value of commodities has been low this year. The cost in transporting recycled commodities was constantly higher than the value of the recycled materials collected. Many jurisdictions have resolved to stockpile the recycled materials until they market value increases.

Infrastructure and Logistical Problems

Infrastructure and logistical problems were identified as major impediments to recycling. Residential concerns with bin sizes and storage locations were some of the infrastructures that hindered some jurisdictions from providing curbside recycling collections. Limited recycling locations, growth, and limited drop-off locations are mentioned as logistical problems that occurred.

Community Education Development and Attitude

Several jurisdictions reported community education development and attitude as a impediment and disincentive to recycling. Other comments included that residents are not interested in recycling, residents will not recycle because of inconveniences and jurisdictions do not have a recycling education program established.

Table 9 lists impediments and disincentives to recycle in Arizona as identified by local jurisdictions within the state. The number of jurisdictions identifying each impediment is given in the middle column. The jurisdictions identifying the impediment are given in the right column. Subcategories are given if several jurisdictions identify similar impediments or disincentive.

<i>Table 9: Impediments and Disincentives to Recycle in Arizona, as Identified by Local Jurisdictions in the State</i>		
Impediments or Disincentives	No.	Jurisdictions
Financial Impediments		
Cost	22	Bullhead City, Cottonwood, Douglas, Florence, Fountain Hills, Holbrook, Kearny, Kingman, Lake Havasua City, Oro Valley, Page, Payson, Safford, Sierra Vista, Thatcher, Tucson, Wickenburg, Winslow, Graham County, Navajo County, Yavapai County, Yuma County
Transportation cost	9	Douglas, Florence, Lake Havasua City, Mesa, Safford, Sierra Vista, Wickenburg, Apache County, Navajo County

Table 9: Impediments and Disincentives to Recycle in Arizona as Identified by Local Jurisdictions in the State

Impediments or Disincentives	No.	Jurisdictions
Market Alternative Development		
End markets/value of commodities	6	Flagstaff, Mesa, Sierra Vista, Wickenburg, Cochise County, Pima County
Low volume of recyclable material	2	Mesa, Sierra Vista
Infrastructure/Logistical Problems		
Limited recycling infrastructure	4	Goodyear, Holbrook, Sierra Vista, Thatcher
No multifamily recycling	2	Casa Grande, Chandler
Growth	1	Douglas
Limited drop-off locations	1	Lake Havasua City
Competition by private haulers	1	Mesa
Community Attitude/Education		
No community interest	6	Coolidge, Holbrook, Kingman, San Luis, Thatcher, Coconino County
Inconveniences	4	Avondale, Gilbert, Goodyear, Oro Valley
No education program	2	Coconino County, Pinal County

Recycled-Content Newsprint

A.R.S. §49-834 requires every consumer of newsprint in Arizona to ensure that the newsprint they purchase during each fiscal year contains an average of at least 40 percent recycled-content. Though it is not a requirement of the annual report, this section documents the efforts by the Recycling Program to verify that the consumers of newsprint in Arizona were in compliance with the statute for FY 2002. This chapter will break down the methodology used to acquire information from newsprint

consumers, give the results gleaned from that information and compare the results to those from FY 2000 and FY 2001.

Statute

A.R.S. §49-834 requires that every consumer of newsprint in the state ensure that the newsprint they purchase each fiscal year contain an average of at least 40 percent recycled-content newsprint. However, certain conditions can be claimed by a consumer which prevented that consumer from satisfying the minimum recycled content requirement. These conditions are:

- Recycled-content newsprint was not available at a comparable price to that of newsprint made from virgin material. Comparable price is defined as within 5 percent of the price of virgin newsprint.
- Recycled-content newsprint did not meet the reasonable quality requirements of the consumer.
- Recycled-content newsprint was not available within a reasonable period of time.

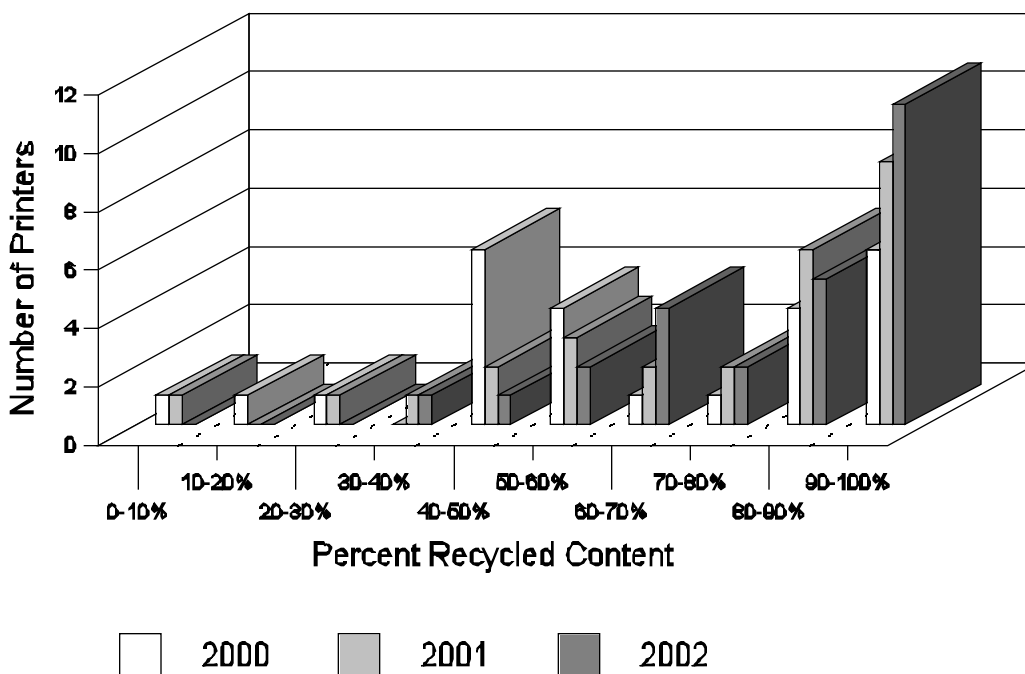


Figure 6: The average recycled content of Arizona web printers. Two peaks for each year show the most common recycled-contents in newspaper. The peaks between 40 percent and 70 percent represent large printers who use several suppliers to maintain a reliable supply of newsprint and who also print various types of publications. The individual peak for each year has migrated to higher recycled-contents over the past three years. The peaks between 80 percent and 100 percent represent smaller printers who rely largely on newsprint from Abitibi Consolidated, the local newsprint mill that produces only 100% recycled-content newsprint. These peaks have become sharper and higher over the past three years.

Each consumer of newsprint is required to certify to the director of ADEQ the number of tons of newsprint and the number of tons of recycled newsprint purchased during the preceding year. In addition, each supplier of newsprint is required to certify the percentages of recycled-content newsprint in each shipment to each consumer in the state. To facilitate the collection of the information, the statute requires the director of ADEQ to develop and maintain a list of every consumer of newsprint in Arizona and every supplier of newsprint to those consumers. The reporting period is the state's fiscal year, July 1 through June 30, and the deadline for reporting is Sept. 1 of each year.

A.R.S. §49-831 defines "newsprint" as uncoated paper, whether supercalendered or machine finished, including the type generally used for the publication of newspapers, commercial advertising inserts, directories or commercial advertising mailers, which is made primarily from mechanical wood pulps. "Consumer of newsprint" is defined as a person who uses newsprint in a commercial printing operation or in a commercial publishing operation.

A supplier of newsprint must not provide a consumer with misleading information concerning the recycled content of a shipment. In addition, a consumer must not provide the director of ADEQ with misleading information concerning the recycled content of its purchases or misleading reasons why they did not meet the 40 percent requirement. If either occurs, ADEQ has within 30 days of this discovery to refer the misleading information to the attorney general for prosecution for fraud. Violations are subject to a civil penalty of no more than \$1,000.

Methodology

In Arizona, the consumers of newsprint are almost exclusively web printers. The term "web" is used as the presses are fed with rolls of newsprint resulting in one continuous sheet of paper that crisscrosses through the machine in a manner similar to a spider's web. Publications that are generally printed on newsprint by web presses include newspapers, newspaper inserts, bulk mail advertisements, magazines, directories and catalogues. During previous years, these publications were contacted to determine which printers they used. In this manner all the operational web printers in Arizona were identified. Therefore, for FY 2002 no publications were contacted, only the printers which produced them.

To complete the FY 2002 verification process, each web printer operating in Arizona was forwarded a certification form. Letters alerting each web printer that the verification process was beginning were distributed on July 8, 2002. Once the statutory deadline had passed, phone calls were made to elicit responses.

Results

This section will discuss the results of the recycled-content newsprint verification process. All 27 of the printers contacted submitted completed forms, a 100 percent

response rate.

However, only 26 purchased newsprint during FY 2002. This is one less than during FY 2001; Fidelity Press West purchased no newsprint during the year. In addition, 26 printers used web presses and one used a sheet fed press such as those used by small print shops. Several of the presses printed only one newspaper, while others were responsible for up to 26 and may have also been used to print other publications such as advertisement inserts, directories and magazines (see Table 10).

The average recycled content of the newsprint consumed during FY 2002 was 70 percent. This represents a 3 percent increase over the 67 percent reported for FY 2001, and a 15 percent increase over the 55 percent report for FY 2000. Only one printer did not reach the 40 percent requirement. This is an improvement over FY 2000 and FY 2001, when four and three web printers, respectively, did not meet the requirement. Casa Grande Valley Newspapers reported an average recycled content of 37 percent, slightly down from the 38 percent reported in FY 2001. The printer claimed exemption two in the statute, "Recycled fiber content did not meet the reasonable quality requirements of the press operator of newsprint." On the positive side, Arizona Web Printing increased its recycled content from 25 percent to 54 percent and Territorial Newspapers increased its recycled content from 8 percent to 99 percent. Overall 10 web printers increased their recycled content, while 11 saw a decrease and five remained the same. Six web printers, Century Graphics (Phoenix), The Daily Dispatch (Douglas), The Daily News Sun (Sun City), Liberty Group Publishing (Globe), The Navajo Times (Window Rock) and Worldwest (Payson), reported using only 100 percent recycled-content paper.

Figure 6 shows graphically the number of printers averaging various ranges of recycled content for FY 2000, FY 2001 and FY 2002. Two peaks occur on the bar chart for each year. The peaks between 40 percent and 70 percent represent, predominantly, large printers that use several suppliers to maintain a reliable supply of newsprint. They also include those that print various types of publications and have clients having specific newsprint needs. In both cases, each printer's newsprint mix is comprised of various types with various recycled contents. The individual peak for each year has migrated from 40 to 50 percent in FY 2000 to 60 to 70 percent in FY 2002. It has also become markedly smaller. These changes may indicate increased satisfaction with the quality of recycled-content newsprint by both the web printers and their clients. The peaks between 80 percent and 100 percent represent small and mid-sized printers that rely largely on newsprint from Abitibi Consolidated in Snowflake, Ariz. This mill produces a 100 percent recycled-content sheet. The individual peak for each year has become sharper and higher, an indication that web-printers are using more 100 percent recycled-content newsprint and more web-printers are using only 100 percent recycled-content newsprint. The number of web-printers averaging more than 90 percent recycled-content newsprint has jumped from six to 11 in the past three years.

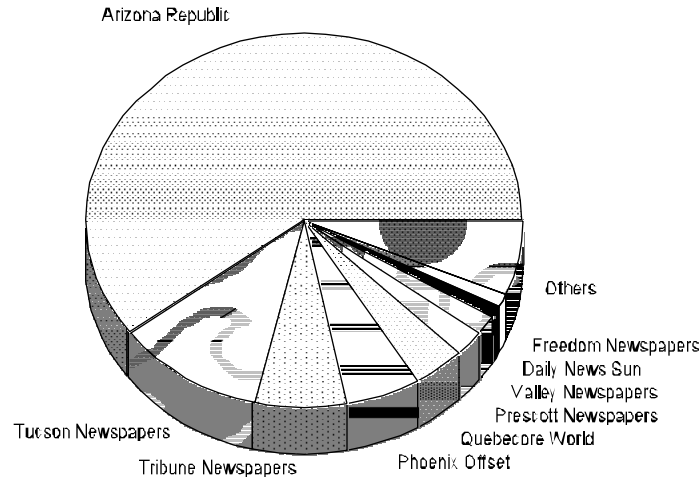


Figure 7. The relative amounts of newsprint consumed by the largest printers in Arizona. The Arizona Republic, Tucson Newspapers and the Tribune combined account for over 80 percent of the newsprint used for the publication needs of all newspapers, directories and magazines in Arizona.

As a group, the presses consumed 175,981 metric tons of newsprint in FY 2002, a 13.2 percent decrease in total consumption compared to the 202,674 metric tons consumed the previous year and a 14.3 percent decrease compared to FY 2000. The large decrease is likely due to fewer advertisements in newspapers, a result of the economic downturn. Figure 7 illustrates the amount of newsprint consumed by each of the major web printers. *The Arizona Republic* alone accounts for 59.8 percent of the newsprint consumed. As opposed to the increase in the amount of recycled-content newsprint consumed between FY 2000 and FY 2001, 113,137 metric tons to 135,830 metric tons, the amount of recycled content newsprint declined to 122,488 metric tons in FY 2002. Again, this is likely a symptom of less newsprint consumed overall during economic downturns. Table 10 contains the web printer companies contacted during the FY 2002 recycled content verification process. Contact information is given along with the company name. The second column gives the total amount of paper consumed by the printer, followed by the amount of the paper that was produced from recycled feedstock and the resulting percentage of recycled-content newsprint for FY 2002. The final column lists the sources from which each printer procured its newsprint.

Table 10: Web Printers

Web Printer	Recycled content 2002 (Metric Tons)	Paper Suppliers
The Arizona Republic William D. Cordt 200 E. Van Buren St. Phoenix, AZ 85004 (602) 444-8131	Total Paper: 105,159.00 Recycled Paper: 71,120.08 Percentage: 67.63%	Abitibi Consolidated Bowater Ponderay Norske Skog Stadacona SP Newsprint
Arizona Web Printing Annebelle L. Seymour 637 S. Vine Ave. Tucson, AZ 85719 (520) 903-9340	Total Paper: 452.96 Recycled Paper: 242.52 Percentage: 53.54%	Abitibi Consolidated E. Aaron Enterprise
Casa Grande Valley Newspapers Dan McKinley PO Box 15002 Casa Grande, AZ 85230 (520) 836-7461	Total Paper: 1,320.00 Recycled Paper: 488.40 Percentage: 37.00%	Abitibi Consolidated Alabama River
Central Print Facility Patrick G. Sullivan 7080 Highway 68 Golden Valley, AZ 86413 (928) 775-3804	Total Paper: 1,769.00 Recycled Paper: 1,515.30 Percentage: 85.66%	Abitibi Consolidated McGrann Paper Corporation Unisource
Century Graphics, LLC Barbara Knight 2960 Northwest Grand Ave. Phoenix, AZ 85017-4909 (602) 271-4060	Total Paper: 80.00 Recycled Paper: 80.00 Percentage: 100.00%	Abitibi Consolidated
The Daily Dispatch Lawrence Blaskey PO Box H Douglas, AZ 85608 (520) 364-3424	Total Paper: 80.00 Recycled Paper: 80.00 Percentage: 100.00%	Abitibi Consolidated

Table 10: Web Printers

Web Printer	Recycled content 2002 (Metric Tons)	Paper Suppliers
The Daily News Sun James B. Dickey 10102 Sante Fe Drive Sun City, AZ 85351 (623) 977-8351	Total Paper: 2,240.00 Recycled Paper: 2,240.00 Percentage: 100.00%	Abitibi Consolidated
Fidelity Press West Ray Schlagerl 3549 E. Broadway Road Phoenix, AZ 85040 (602) 276-5123	Total Paper: 0.00 Recycled Paper: 0.00 Percentage: N/A	
Flagstaff Publishing Kristi F. Hostler PO Box 1849 Flagstaff, AZ 86002 (928) 556-2294	Total Paper: 1,112.06 Recycled Paper: 1,053.42 Percentage: 94.73%	Abitibi Consolidated Inland Empire
Freedom Newspapers of Southwestern Arizona, Inc. David Fornof 2055 Arizona Ave. Yuma, AZ 85364 (928) 539-6988	Total Paper: 2,013.00 Recycled Paper: 1,761.00 Percentage: 87.48%	Abitibi Consolidated Evanston Paper Company
(Gannett) Phoenix Offset Edwin R. Hildebrand 411 N. Roosevelt Ave. Chandler, AZ 85226 (480) 961-6177	Total Paper: 9,657.00 Recycled Paper: 7,345.00 Percentage: 76.06%	Abitibi Consolidated Domtar Gould NORPAC Shasta
Intermountain Color - Phoenix Kevin Neff PO Box 4299 Boulder, CO 80306 (303) 443-3800	Total Paper: 1,883.00 Recycled Paper: 1,803.80 Percentage: 95.79%	Abitibi Consolidated Inland Empire

Table 10: Web Printers

Web Printer	Recycled content 2002 (Metric Tons)	Paper Suppliers
Intermountain Color - Tucson Kevin Neff PO Box 4299 Boulder, CO 80306 (303) 443-3800	Total Paper: 1,363.00 Recycled Paper: 1,150.00 Percentage: 84.37%	Abitibi Consolidated Inland Empire
Liberty Group Publishing Ellen A. Kretsch PO Box 31 Globe, AZ 85502 (928) 425-7121	Total Paper: 83.00 Recycled Paper: 83.00 Percentage: 100.00%	Atlas Papers, Inc.
The Navajo Times William Holtsoi PO Box 310 Window Rock, AZ 86515 (928) 871-6641	Total Paper: 123.70 Recycled Paper: 123.70 Percentage: 100.00%	Abitibi Consolidated
News West Publishing Company Nancy E.. Darmofal 2435 Miracle Mile Bullhead City, AZ 86442 (928) 763-2505	Total Paper: 1,058.00 Recycled Paper: 869.12 Percentage: 82.15%	Abitibi Consolidated Atlas Papers, Inc. Evanston Paper – Weyerhaeuser Unisource – Weyerhaeuser
Pine Graphics Joanne McKernan PO Box 88 Overgaard, AZ 85933 928 535-4242	Total Paper: 4.90 Recycled Paper: 1.96 Percentage: 40.00%	XPedx Paper
Prescott Newspapers, Inc. 8249 E. Highway 69 Prescott Valley, AZ 86314 (928) 775-3804	Total Paper: 3,739.00 Recycled Paper: 3,451.80 Percentage: 92.32%	Abitibi Consolidated McGrann Paper Corporation Unisource

Table 10: Web Printers

Web Printer	Recycled content 2002 (Metric Tons)	Paper Suppliers
Pueblo Publishers Roger W. Toops 7122 N. 59th Ave. Glendale, AZ 85301 (623) 842-6000	Total Paper: 261.04 Recycled Paper: 214.28 Percentage: 82.09%	Abitibi Consolidated Atlas Papers, Inc.
Quebecor World Janet Dines 1850 E. Walkins, Suite 20 Phoenix, AZ 85034 (800) 234-4349	Total Paper: 6,653.00 Recycled Paper: 6,242.80 Percentage: 93.83%	Abitibi Consolidated McGrann West
The Sedona Red Rock News Robert B. Larson PO Box 619 Sedona, AZ 86339 (928) 282-6809	Total Paper: 222.90 Recycled Paper: 140.92 Percentage: 63.22%	Abitibi Consolidated Atlas Papers, Inc.
The Sierra Vista Herald/ The Bisbee Daily Review Philip L. Vega 102 Fab Ave. Sierra Vista, AZ 85635 (520) 458-9440	Total Paper: 918.00 Recycled Paper: 581.00 Percentage: 63.29%	Abitibi Consolidated Champion International
Territorial Newspapers Scott B. Linstrom PO Box 27087 Tucson, AZ 85726 (520) 294-1200	Total Paper: 725.00 Recycled Paper: 720.00 Percentage: 99.31%	Abitibi Consolidated
Tribune Newspapers Matt Wainscott 120 W. 1st Ave. Mesa, AZ 85210 (480) 898-6344	Total Paper: 12,505.00 Recycled Paper: 8,093.00 Percentage: 64.72%	Abitibi Consolidated Boise Cascade Evanston Paper Company NORPAC Web Source

Table 10: Web Printers

Web Printer	Recycled content 2002 (Metric Tons)	Paper Suppliers
Tucson Newspapers Sandra Osborne PO Box 26887 Tucson, AZ 85726-6887 (520) 573-4454	Total Paper: 19,481.00 Recycled Paper: 10,793.83 Percentage: 55.41%	Abitibi Consolidated Bowater Ponderay Norske Skog Ponderay Newsprint Company SP Newsprint
Valley Newspapers Steve Steinke 23043 N. 16th Lane Phoenix, AZ 85029 (623) 445-2800	Total Paper: 2,837.00 Recycled Paper: 2,053.19 Percentage: 72.37%	Abitibi Consolidated Bowater Grenada Bowater Ponderay McGrann Paper Corporation
Worldwest LLC Richard Haddad PO Box 2520 Payson, AZ 85547 (928) 474-5251	Total Paper: 240.00 Recycled Paper: 240.00 Percentage: 100.00%	Abitibi Consolidated

Appendix 1: Waste Disposed at Solid Waste Landfills

Table 11: Tons of Waste Disposed at Solid Waste Landfills in Arizona, as Reported to ADEQ

Name	Type ¹	County	Operation Status	Tipping Fee ²	Total Tons Landfilled ³
Abitibi Consolidated – Snowflake	SGSWLF	Navajo	Active	N/A	78,802.00
Allied Waste – Apache Junction	MSWLF	Pinal	Active	\$33.80/ton	174,124.00
Allied Waste – Copper Mountain	MSWLF	Yuma	Active	\$36.20/ton	192,721.00
Allied Waste – Lake Havasu City	MSWLF	Mohave	Active	\$21.50/yd ³	72,535.00
Allied Waste – Queen Creek	MSWLF	Maricopa	Active	\$30.60/ton	135,307.00
Allied Waste – Southwest Regional	MSWLF	Maricopa	Active	\$20.00/ton	340,782.17
Apache County – Blue Hills Regional	MSWLF	Apache	Active	\$50.00/ton	8,994.23
AEPCO – Apache Power Generating Station	SGSWLF	Apache	Active	N/A	66.83
Arizona Power Service – Palo Verde	SGSWLF	Maricopa	Active	N/A	28,356.00
Arizona Strip	MSWLF	Mohave	Active	\$21.00/ton	4,849.48
ASARCO Ray Complex – Hayden Concentrator	SGSWLF	Pima	Active	N/A	3,787.00
ASARCO Ray Complex – Hayden Smelter	SGSWLF	Pima	Active	N/A	2,101.00
ASARCO Ray Complex – Mission	SGSWLF	Pima	Active	N/A	425.00
ASARCO Ray Complex – Ray Mine	SGSWLF	Pima	Active	N/A	4,852.00

Table 11: Tons of Waste Disposed at Solid Waste Landfills in Arizona, as Reported to ADEQ

Name	Type ¹	County	Operation Status	Tipping Fee ²	Total Tons Landfilled ³
ASARCO Ray Complex – Silver Bell	SGSWLF	Pima	Active	N/A	58.00
BHP Copper – San Manuel Plantsite	SGSWLF	Gila	Active	N/A	96.00
BHP Copper – San Manuel Plantsite Wood Dump	SGSWLF	Gila	Active	N/A	96.00
BHP Copper – San Manuel Minesite Garbage	SGSWLF	Gila	Active	N/A	96.00
BHP Copper – San Manuel Mainsite	SGSWLF	Gila	Active	N/A	96.00
BHP Copper – San Manuel Mainsite Wood Dump	SGSWLF	Gila	Active	N/A	96.00
BHP Copper – Superior	SGSWLF	Pinal	Active	N/A	30.00
Bradley Investment – 40th Street	NMSWLF	Maricopa	Inactive	N/A	0.00
Calmat – Litchfield/Avondale	NMSWLF	Maricopa	Active	\$19.00/ton	69,626.00
Casa Grande, City of – Casa Grande	MSWLF	Pinal	Active	\$15.00/ton	65,108.00
Chandler, City of – Chandler (McQueen)	MSWLF	Maricopa	Active	\$36.00/ton	110,940.00
Cochise County – Elfrida/Eastern Regional	MSWLF	Cochise	Active	\$39.00/ton	44,456.00
Cochise County – Western Regional	MSWLF	Cochise	Active	\$39.00/ton	24,222.00
Cyprus – Sierrita	SGSWLF	Pima	Active	N/A	360.18
Eloy, City of – Eloy	MSWLF	Pinal	Active	\$20.00/ton	20,361.00

Table 11: Tons of Waste Disposed at Solid Waste Landfills in Arizona, as Reported to ADEQ

Name	Type ¹	County	Operation Status	Tipping Fee ²	Total Tons Landfilled ³
Flagstaff, City of – Cinder Lake	MSWLF	Coconino	Active	\$31.10/ton	109,769.00
Gila County – Buckhead Mesa/ Payson	MSWLF	Gila	Active	\$34.10/ton	27,393.00
Gila County – Russell Gulch/Globe	MSWLF	Gila	Active	\$34.10/ton	15,654.00
Glendale, City of – Glendale	MSWLF	Maricopa	Active	\$26.25/ton	396,473.00
Glenn Weinberger	NMSWLF	Maricopa	Active	\$25.50/ton	107,277.95
Graham County – Graham County Regional	MSWLF	Graham	Active	N/A	12,308.00
Grand Canyon National Park – South Rim	SGSWLF	Coconino	Active	N/A	2,013.00
Greenlee County – Blue	MSWLF	Greenlee	Active	N/A	213.53
Greenlee County – Loma Linda	MSWLF	Greenlee	Active	\$42.10/ton	13,511.91
Huachuca City, City of – Huachuca City	MSWLF	Cochise	Active	\$35.00/ton	29,824.00
La Paz County Regional – La Paz County	MSWLF	La Paz	Active	\$22.50/ton	69,418.00
Mohave County – Cerbat	MSWLF	Mohave	Active	\$32.45/ton	56,947.00
Mohave County – Mohave Valley	MSWLF	Mohave	Active	\$28.65/ton	64,035.00
Patagonia, Town of – Patagonia	MSWLF	Santa Cruz	Active	\$10.00/yd ³	940.58
Phelps Dodge – Bagdad	SGSWLF	Yavapai	Active	N/A	149.00

Table 11: Tons of Waste Disposed at Solid Waste Landfills in Arizona, as Reported to ADEQ

Name	Type ¹	County	Operation Status	Tipping Fee ²	Total Tons Landfilled ³
Phelps Dodge – Miami	SGSWLF	Gila	Active	N/A	550.00
Phelps Dodge – Morenci	NMSWLF	Greenlee	Active	N/A	6.00
Phoenix, City of – Skunk Creek	MSWLF	Maricopa	Active	\$24.25/ton	714,585.00
Pima County – Ajo	MSWLF	Pima	Active	\$24.25/ton	2,205.71
Pima County – Ina Road	NMSWLF	Pima	Active	\$20.00/ton	34,198.00
Pima County – Sahuarita	MSWLF	Pima	Active	\$23.50/ton	61,922.00
Pima County – Tangerine Road	MSWLF	Pima	Active	\$23.50/ton	117,888.00
Resource Recovery Trust – Speedway	NMSWLF	Pima	Active	\$25.00/ton	24,345.00
Salt River Indian Tribe – Gilbert Billing	MSWLF	Maricopa	Active	\$35.00/ton	72,711.00
Salt River Indian Tribe – Mesa Billing	MSWLF	Maricopa	Active	\$35.00/ton	217,312.00
Salt River Indian Tribe – Private Hauler Billings	MSWLF	Maricopa	Active	\$35.00/ton	102,637.96
Salt River Indian Tribe – Scottsdale Billing	MSWLF	Maricopa	Active	\$35.00/ton	129,549.00
SRP – Coronado Generating Station	SGSWLF	Apache	Active	N/A	112.71
Santa Cruz County – Rio Rico	MSWLF	Santa Cruz	Active	\$36.00/ton	42,237.00
Santa Cruz County – Sonoita/Elgin	MSWLF	Santa Cruz	Active	\$36.00/ton	1,508.00
South Yuma County	MSWLF	Yuma	Active	\$20.00/ton	46,264.00

Table 11: Tons of Waste Disposed at Solid Waste Landfills in Arizona, as Reported to ADEQ

Name	Type ¹	County	Operation Status	Tipping Fee ²	Total Tons Landfilled ³
Tucson, City of – Los Reales	MSWLF	Pima	Active	\$23.00/ton	515,321.00
Waste Management – Ironwood (Adamsville)	MSWLF	Pinal	Active	\$ 10.00/yd ³	286,464.00
Waste Management – Butterfield Station	MSWLF	Maricopa	Active	\$22.75/ton	1,122,710.00
Waste Management – Deer Valley	NMSWLF	Maricopa	Inactive	N/A	0.00
Waste Management – Dudleyville	MSWLF	Pinal	Active	\$10.00/yd ³	8,902.00
Waste Management – Grey Wolf	MSWLF	Yavapai	Active	\$32.99/ton	195,081.91
Waste Management – Lone Cactus	NMSWLF	Maricopa	Active	\$6.75/yd ³	727,048.00
Waste Management – Northwest Regional	MSWLF	Maricopa	Active	\$23.09/ton	510,859.00
Waste Management – Painted Desert (Pen Rob)	MSWLF	Navajo	Active	\$26.00/ton ³	147,825.95
Waste Management – Sierra Estrella	MSWLF	Pinal	Inactive	\$ 22.75/ton	0.00
Yuma Proving Grounds	SGSWLF	Yuma	Active	N/A	19,184.00
Total					7,450,698.10